AUSTRALIA'S LIVESTOCK AND MEAT INDUSTRY

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AUSTRALIA--MAJOR CATTLE AND SHEEP PRODUCING AREAS

Foreword

Australia is the world's largest producer and exporter of wool. Although seven countries produce more beef only one—Argentina—has larger exports. Only the USSR produces more sheepmeats, while New Zealand is the only country exporting more lamb and mutton.

This study is one of a series designed to help keep people in the livestock industry and in government informed of developments in countries that export livestock and meat products. In the past several years, similar studies have been made in New Zealand, Canada, Mexico, Central America, Argentina, Uruguay, Ireland, and Denmark. This study supersedes The Livestock and Meat Industry of Australia, FAS-M-164, July 1965.

During his visit to Australia, the author received the assistance of many persons working in the fields of livestock production and marketing. He wishes to acknowledge with thanks the cooperation and assistance given him by Australia's industry and Government representatives, as well as by the U.S. Agricultural Attaché and his staff.

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INTRODUCTION

Australia, encompassing a vast land area with nearly 13 million people, is burdened by an adverse climate and rather poor soil conditions which make it generally unsuitable for crop production. However, the country's farmers have taken advantage of natural and improved grasses and the conservation of water for livestock in helping Australia attain its present position as a major producer and exporter of animal products.

More than 60 percent of the continent is in the Temperate Zone, while 39 percent is situated in the tropical region north of the Tropic of Capricorn. The relief of the land is low or moderately high, and the average elevation of the country is less than 1,000 feet. A mountain range with a maximum elevation of about 7,000 feet transverses the eastern side of the continent and contributes to a substantial portion of the country's runoff from a well-defined river system which generally drains directly into the Pacific. A plateau descending from the eastern mountains range extends westward across the continent.

Prevailing southeastern winds bring rain throughout the year, with rainfall diminishing as the winds move inland. The southwestern and southeastern coastal regions and the island State of Tasmania, under the influence of the westerlies, have a relatively high rainfall.

However, a narrow rainfall belt, barely adequate for crops and pastures, extends along the southern coast. Inland rain-bearing clouds move eastward and deposit precious quantities of water on the higher elevation of the plateau areas adjacent to the eastern mountain range. The highest rainfall in these areas is about 30 inches, with diminishing amounts and irregular rainfall patterns farther inland.

A central zone, equivalent to 40 percent of the continent's total land mass, receives annual rainfall of less than 10 inches. Another 30 percent further removed from the center, receives less than 28 inches; while 75 percent of the continent has an evaporation rate that exceeds the rainfall. In contrast, the coastal areas of the tropical north are hit by the northwest monsoons in the summer and dry weather in the winter.

A further distinguishing physical characteristic, the inherent low fertility of Australia's soil, has been overcome to produce food and fibers in abundance. Phosphate fertilizers, trace elements, and legumes (seeded both in native pastures and with improved species of grasses)—as well as conservation of water—have been the major factors contributing to livestock production.

IMPORTANCE OF THE LIVESTOCK INDUSTRY

The first British settlers sailed into Botany Bay on the Australian east coast in January 1788. On the boat were 44 sheep and goats, seven cows, a bull, a bull calf, a few pigs, and poultry. The animals thrived on natural grasses found in clearings on river banks, and farmers who owned livestock prospered more than those who attempted to grow crops.

By 1800 the nation's livestock multiplied to include 1,000 cattle and 6,000 sheep, and the 1880 census enumerators counted 7.5 million cattle and 60 million sheep. Except for losses suffered in periodic droughts, spectacular growth in livestock numbers has continued. In 1940 the cattle herd had increased to 13 million, while sheep and lambs numbered 119 million. In 1971 cattle numbers were 24.4 million and sheep and lambs totaled 180 million.

Since World War II, the significance of the rural sector in the Australian economy, in terms of employment and income, has declined. About 83 percent of the population live in urban areas. The remaining 17 percent live in rural areas, but less than 10 percent of the total population live permanently on farms. In recent years agriculture contributed about 12 percent to the GNP, compared with 18 percent in the early 1950's.

The decline in agriculture's share of the GNP is not due to lack of progress in the rural sector, but is evident of industrial development which has changed Australia from a young country almost completely dependent upon rural production to a sophisticated, urbanized nation.

Australian livestock numbers by States, average and annual[1]

Livestock and State	Average		1966	1967	1968	1969	1970	1971[2]
	1956-60	1961-65						
Cattle and calves:	*Mil. head*	*Mil. head*	*Mil. head*	*Mil. head*	*Mil. head*	*Mil. head*	*Mil. head*	*Mil. head*
Queensland	7.2	7.2	6.9	6.9	7.4	7.7	7.5	8.0
New South Wales[3]	3.8	4.6	4.2	4.2	4.6	4.9	5.6	6.5
Victoria	2.7	3.2	3.4	3.5	3.5	3.9	4.5	5.1
Western Australia	.9	1.2	1.3	1.4	1.4	1.5	1.7	1.8
Northern Territory	1.1	1.1	1.0	1.1	1.1	1.2	1.2	1.1
South Australia	.6	.7	.7	.7	.7	.9	1.0	1.2
Tasmania	.4	.4	.5	.5	.6	.6	.6	.7
Total[4]	16.7	18.4	17.9	18.3	19.2	20.6	22.2	24.4
Sheep and lambs:								
New South Wales[3]	67.3	70.6	61.7	64.1	68.1	68.4	72.5	71.3
Western Australia	15.5	19.4	24.4	27.4	30.2	32.9	33.6	35.1
Victoria	25.9	28.1	31.0	31.2	27.9	30.2	33.2	34.1
South Australia	14.7	16.2	18.0	17.9	16.4	18.4	19.7	19.3
Queensland	22 6	23.0	18.4	19.3	19.9	20.3	16.4	15.1
Tasmania	3.2	3.6	4.1	4.3	4.4	4.4	4.6	4.6
Total[4]	149.2	160.9	157.6	164.2	166.9	174.6	180.1	179.5
Hogs:	*1,000 head*	*1,000 head*	*1,000 head*	*1,000 head*	*1,000 head*	*1,000 head*	*1,000 head*	*1,000 head*
New South Wales	375	432	480	514	645	690	708	780
Victoria	260	328	384	351	377	422	495	520
Queensland	405	415	417	468	520	535	480	493
South Australia	96	162	224	222	242	288	351	393
Western Australia	127	149	144	161	183	220	250	291
Tasmania	60	78	96	86	87	95	111	113
Northern Territory	2	3	2	3	2	2	4	4
Total[4]	1,325	1,567	1,747	1,804	2,056	2,253	2,398	2,594

[1] March 31 census. [2] Preliminary. [3] Includes Australian Capital Territory. [4] May not add due to rounding.

Source: Commonwealth Statistician.

Agriculture's share of export earnings also has declined. Prior to World War II farm products accounted for about 90 percent of export receipts. Currently, farm products account for about 55 percent of export earnings. This decline in agriculture's relative importance reflects increased sales of manufactured goods and minerals.

The relative importance of livestock has decreased even more than that of agriculture as a whole. But sales of pastoral products, except dairy and farmyard, account for nearly 40 percent of the gross value of farm production and 60 percent of the export earnings from agriculture products.

Wool, presently a troubled industry, is responsible for much of the decline in relative importance of livestock production in Australia. This situation is due to a general decline in wool values on the world market. Australia wool producers over the past two decades have been confronted with increasing competition from man-made fibers. The result has been that even with substantially larger clips, producers gross annual sales of wool have totaled less in recent years than in the 1950's.

THE BEEF CATTLE INDUSTRY

Australia, the seventh largest beef and veal producing nation and second largest exporter, has an annual output of 2.2 billion pounds—equivalent to about one-tenth the U.S. production. Canada and the United Kingdom produce a little less beef and veal than Australia.

Australia's cattle are raised primarily in the northeast and north central areas and to a lesser extent in the high rainfall areas in the southeast and extreme southwest. With the success of phosphate fertilizers and trace elements in pasture improvement programs, increasing numbers of cattle are being grazed along with the sheep in the grain-sheep areas of southern Australia. Low wool prices have contributed to the increase in cattle production in these areas. Similarly, lower prices for dairy products, relative to beef, have contributed to a shift away from milk to beef production in the higher and more reliable rainfall areas of southeastern Queensland, southwestern Victoria and the southwestern corner of western Australia.

Beef cattle are grazed in every state and territory, but nearly 80 percent are in the three eastern states—Queensland, New South Wales, and Victoria. Approximately one-third of all cattle are in Queensland, and nearly 92 percent of these are beef cattle. New South Wales has about one-fourth of the total cattle, and 87 percent of these are meat animals. Victoria has one-fifth of the total cattle, but only 55 percent of these are beef animals. Western Australia has 7 percent of the total cattle, while the Northern Territory and South Australia each have about 5 percent. Most of the cattle in the Northern Territory are beef cattle, but an appreciable percentage of both western Australia and South Australia cattle are dairy animals.

Dairy beef, as is true in other countries, contribute an appreciable proportion of the total beef and veal output. Most of the male calves and some of the female calves from the dairy herd are used for veal and beef production. Milk cows also are slaughtered for beef at the end of their productive lives. In 1971 there were 24.4 million head of cattle in Australia of which only 4.1 million were used for milk. This compares with 17.9 million of which 4.6 million were used for milk in 1966.

A large part of the Australian beef herd is descended from British breeds. Shorthorn was the predominant breed used by the early settlers to stock properties, perhaps partly due to their popularity in England. The surviving offspring from these early importations adapted to the Australian climate and grazing conditions.

The Hereford gradually became the most popular beef breed in the southern states and with many cattle ranchers in Queensland, and the Angus has gained in popularity in recent years.

In the north many cattle owners have developed crossbred beef animals. Santa Gertrudis, introduced into the country in the early 1950's has become quite popular in that area. Since the breed was developed primarily from a Shorthorn-Brahman cross, many cattle raisers use Santa Gertrudis sires on the Shorthorn herd for beef production; others use Brahman sires on their Shorthorn brood cows.

Numbers and slaughter trends

The number of cattle and calves totaled 22.2 million in 1970 compared with 20.6 million in 1969, an increase of 7.6 percent. During the 4 years 1966-70, numbers increased by about 24 percent—beef cattle by about 33 percent, while dairy cattle declined by 10 percent during this period.

Australian cattle and calf numbers and slaughter

Year	Number on farms[1]	Total slaughter[2]	Slaughter as percent of number
Average:	*1,000 head*	*1,000 head*	*Percent*
1956-60	16,673	5,147	30.8
1961-65	18,357	5,721	31.2
Annual:			
1966	17,936	6,324	35.3
1967	18,270	5,650	30.9
1968	19,218	5,656	29.4
1969	20,598	5,608	27.2
1970	22,162	5,861	26.4

[1] March 31 Census. [2] Year ending June 30.

The build-up in beef cattle in recent years, as recorded by the Census, has occurred primarily in breeding stock. During the 4 years 1966-70 numbers of beef cattle, cows, and heifers—1 year and over—increased by 38 percent. The proportional increase was even larger—57 percent for calves under 1 year of age. The increase in calves is attributed to the holding of heifers for selection as breeders as well as steer calves for beef production. Thus, calf slaughter declined.

Significantly, numbers of other beef cattle (1 year and over) were only 9 percent larger in 1970 than in 1966. Undoubtedly, slaughter cattle are being marketed and slaughtered at a younger age than was true only a few years ago. The buildup of breeding cattle and the marketing of cattle at a younger age eventually will result in a higher turnoff rate from the beef cattle herd. However, due to the large buildup of breeding herds, slaughter as a percentage of the inventory number declined from about 35 percent in 1966 to 27 percent in 1970.

Beef and veal production

The long-term trend in beef and veal production has entailed gradual increases with significant annual fluctuations. In recent years, however, production has grown at an increasing rate. Beef and veal production for the 1969-70 season was 15 percent above the 1961-65 average and 24 percent larger than the 1956-60 average.

However, beef and veal output declined during five of the 15 seasons between 1956-57 and 1969-70. Declines in output occurred in 1957-58, 1959-60, 1960-61, 1965-66, and 1966-67. These declines were generally Australian-wide, except in 1957-58 when Queensland was the only state to show an appreciable drop in output.

Australian meat production by type[1]

Year[2]	Beef and veal	Mutton	Lamb	Pork	Total
Average:	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*	*Million pounds*
1956-60	1,799	631	370	218	3,018
1961-65	1,941	815	495	257	3,508
Annual:					
1966	2,086	872	469	298	3,725
1967	1,937	783	531	313	3,564
1968	1,993	923	542	330	3,788
1969	2,061	820	679	358	3,918
1970[3]	2,228	973	691	384	4,276

[1] Carcass weight. [2] Year ending June 30. [3] Preliminary.

Source: Australia Commonwealth Bureau of Census and Statistics.

Financial aspects

The Australian Bureau of Agricultural Economics published the first survey of the economic financial position of Australian beef cattle producers in April 1970. Although the beef cattle industry is undergoing constant change, this portrays a realistic picture of the financial aspects of beef production in Australia. Although only a small part of the detailed data included in the publication is presented herein, the author commends the Bureau's survey report as a valuable reference to anyone who has an interest in the Australia beef cattle industry.

The Bureau obtained information on 342 properties from which estimates were made pertaining to the total population of beef cattle properties having at least 50 head of cattle for beef production. However, in the Channel Country and the Barkly-Gulf Region of Queensland, and the Kimberley Region of western Australia, the study only included properties with more than 500 beef cattle.

Information on the physical characteristics of the properties and details concerning management and production practices, marketing, and capital investment were obtained by personal interviews. Data on costs and returns were generally supplied by accountants or company officers.

The data collected was analyzed and presented by States and regions, herd size, enterprise combination, type of beef cattle enterprise, and by years.

Properties averaged more than a million acres in the Northern Territory as compared with slightly more than 2,500 acres in the southern states where beef cattle raising was a subsidiary enterprise to sheep grazing and grain cropping. Beef usually was the only enterprise in northern Australia.

Australian beef cattle farms: Capital structure, production costs, and returns, per property, by States, 1962-63 to 1964-65

Item	Unit	Queensland	New South Wales	Victoria	Northern Territory	Western Australia		South Australia	Tasmania	Australia
						Kimberley	South-West	South-East		
Capital structure:										
Land:										
Unimproved value	Percent	19.6	29.2	26.3	0.0	0.0	16.5	15.6	15.5	24.3
Value improvements	Percent	9.4	24.3	53.2	0.0	0.0	41.4	44.0	41.7	25.8
Total land	Percent	29.0	53.5	70.5	0.0	0.0	57.9	59.6	57.2	50.1
Water facilities	Percent	6.4	3.5	1.6	12.0	4.7	1.9	2.5	1.1	4.0
Fencing	Percent	7.6	5.3	2.8	8.8	5.7	4.0	7.5	7.5	5.5
Yards	Percent	2.3	1.1	0.7	3.2	2.9	1.1	1.2	0.8	1.8
Buildings	Percent	2.6	6.8	2.3	3.9	3.4	4.0	7.5	5.8	4.3
Total structural improvements	Percent	18.9	16.7	7.4	27.9	16.7	10.9	18.8	15.3	15.6
Plant and equipment	Percent	4.9	7.0	2.3	3.7	3.0	7.8	5.2	5.6	5.8
Working horses	Percent	0.3	0.1	0.0	(1)	0.9	(1)	0.1	0.1	(1)
Beef cattle	Percent	44.7	13.7	7.0	68.3	79.4	17.7	8.9	16.2	23.0
Other livestock	Percent	2.2	9.0	3.8	0.0	0.0	5.7	7.4	5.6	5.6
Total capital	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total capital	US $	111,028	145,091	229,222	458,760	408,340	103,204	176,748	161,483	149,985
Costs:										
Labor:										
Family	Percent	5.3	4.2	6.0	0.0	3.4	6.9	7.1	5.1	4.8
Hired	Percent	13.0	9.7	7.6	22.2	18.0	11.0	9.6	12.7	10.7
Food and keep	Percent	2.0	1.1	0.5	9.1	8.3	0.1	0.7	1.5	1.4
Payroll tax-worker's compensation	Percent	0.2	0.3	0.2	0.0	0.2	0.1	0.0	0.1	0.2
Contracts (excluding development)	Percent	1.7	7.7	6.8	0.7	0.4	3.5	10.6	7.7	5.7
Total labor	Percent	22.2	22.9	21.0	32.0	30.3	21.6	28.0	27.1	22.9
Materials	Percent	27.8	28.3	31.2	20.3	20.9	38.2	35.9	34.3	29.0
Services	Percent	27.7	28.4	29.4	20.3	33.9	21.3	19.8	19.4	27.5
Depreciation	Percent	22.3	20.5	18.4	27.5	14.9	18.9	16.3	19.1	20.6
Total costs	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total costs	US $	11,316	16,468	11,594	61,966	48,076	12,045	21,452	17,641	14,134
Returns:										
Beef enterprise	Percent	77.2	25.0	36.0	96.8	99.7	45.1	21.9	34.4	43.3
Sheep enterprise	Percent	12.9	56.2	52.7	3.2	0.3	26.2	74.6	57.3	(2)
Dairy enterprise	Percent	-0.1	0.7	4.8	0.0	0.0	7.0	0.7	1.4	(2)
Grain enterprise	Percent	6.1	18.5	1.1	0.0	0.0	0.5	0.4	0.8	56.7
Other property income	Percent	3.0	2.1	4.8	0.0	0.0	20.2	1.8	5.2	(2)
Other income	Percent	1.0	1.1	0.6	0.0	0.0	0.9	0.6	0.9	(2)
Total returns	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total returns	US $	20,314	27,534	19,633	58,399	71,371	17,336	27,648	28,212	23,596
Net income	Percent	8,998	11,066	8,039	-3,567	23,295	5,291	6,196	10,571	9,462
Operator's allowance	Percent	1,977	1,898	1,869	2,134	1,962	1,962	1,962	1,962	1,925
Returns to capital and management	Percent	7,021	9,168	6,171	-5,701	21,333	3,329	4,234	8,609	7,537
Rate of return on capital	Percent	6.3	6.3	2.7	-1.2	5.2	3.2	2.4	5.3	5.0

[1] Included with plant and equipment. [2] Not available.

Source: The Australian Beef Cattle Industry Survey, 1962-63 to 1964-65, Bureau of Agricultural Economics, Cambera, Australia, April 1970.

Australia's beef cattle properties: Physical characteristics per property by States, 1962-63 to 1964-65

Item	Unit	Queensland	New South Wales	Victoria	Northern Territory	Western Australia		South Australia	Tasmania	Australia
						Kimberley	South-West	South-East		
Land use:										
Cropping	Percent	0.6	8.6	8.5	(1)	0.0	6.5	9.0	7.3	(2)
Improved pasture	Percent	1.3	13.5	64.1	(1)	0.6	59.1	65.4	41.5	(2)
Natural pasture	Percent	90.0	76.8	11.1	(1)	70.1	30.1	4.4	48.9	(2)
Total pasture	Percent	91.3	90.3	75.2	(1)	70.7	89.2	69.8	90.4	(2)
Area not used	Percent	8.1	1.1	16.3	(1)	29.3	4.4	21.2	2.2	(2)
Total area	Percent	100.0	100.0	100.0	(1)	100.0	100.0	100.0	100.0	(2)
Total area	Acres	31,433	3,479	1,262	1,108,238	947,553	1,062	2,270	2,103	19,445
Livestock:										
Beef cattle	Number	862	236	164	8,901	9,811	216	154	256	487
Dairy cattle	Number	6	4	9	---	---	16	3	4	6
Sheep	Number	379	1,907	1,162	---	---	599	2,604	1,762	1,219
Stocking rate - per cattle equivalent	Acres	34.4	7.3	4.0	125	97	3.5	4.7	4.4	30.1
Composition of beef herd:										
Cows and heifers - 1 yr. and over	Percent	47.0	51.7	51.1	54.7	44.1	46.8	59.6	50.1	48.9
Calves - under 1 yr.	Percent	23.4	23.4	22.1	22.2	23.4	25.5	29.6	19.7	23.3
Bulls	Percent	1.9	1.5	1.8	3.0	2.0	1.5	2.8	1.2	1.9
Spayed cows	Percent	2.0	0.2	1.4	---	---	---	0.2	---	1.3
Steers - 1 to 2 yrs	Percent	12.0	15.7	20.7	20.1	14.8	20.2	7.1	24.3	12.5
Steers - 2 yrs. and over	Percent	13.7	7.5	2.9	---	15.6	6.0	0.7	4.6	12.2
Total	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Branding rate	Percent	55.4	72.0	68.4	39.7	51.3	75.9	87.2	68.5	58.7
Mortality rate	Percent	7.2	4.1	3.1	10.5	12.6	2.6	1.6	2.2	6.8
Turnoff	Percent	32.7	61.6	57.8	13.1	12.8	78.6	66.2	67.9	38.8
Turnoff	Number	281	145	95	(2)	(2)	170	102	174	189
Age of beef cattle turnoff:										
under 6 months	Percent	2.4	3.3	1.3	(2)	0.0	3.9	0.0	0.6	2.7
6 months to 1 year	Percent	5.3	27.7	24.0	(2)	0.0	22.5	49.7	20.0	19.6
1 year - 1½ years	Percent	8.6	10.5	14.6	(2)	0.0	18.8	15.1	21.0	11.2
1½ years - 2 years	Percent	14.0	8.4	17.2	(2)	0.0	15.1	7.8	26.3	12.2
2 years - 3 years	Percent	24.2	33.7	26.8	(2)	4.1	21.1	2.2	17.3	28.1
3 years - 4 years	Percent	16.5	4.8	0.2	(2)	21.6	7.7	0.0	7.4	8.2
4 years - over	Percent	29.0	11.6	15.8	(2)	74.3	10.9	25.2	7.5	17.9
Total	Percent	100.0	100.0	100.0	(2)	100.0	100.0	100.0	100.0	100.0

See footnote at end of table.

Australia's beef cattle properties: Physical characteristics per property by States, 1962-63 to 1964-65–Continued

Item	Unit	Queensland	New South Wales	Victoria	Northern Territory	Western Australia		South Australia	Tasmania	Australia
						Kimberley	South-West	South-East		
Destination of beef cattle turnoff:										
Direct to packing plant	Percent	31.7	21.9	2.6	(2)	92.4	7.3	(2)	57.5	(2)
Local sales yards	Percent	31.1	57.6	43.5	(2)	0.2	46.3	(2)	33.6	(2)
Other sales yards	Percent	16.4	11.8	50.5	(2)	1.8	44.9	(2)	7.8	(2)
Shipping port	Percent	0.1	0.0	0.0	(2)	3.2	0.0	(2)	0.0	(2)
Fattening property	Percent	15.0	2.0	0.4	(2)	0.0	0.0	(2)	1.2	(2)
Breeding property	Percent	5.6	6.6	3.3	(2)	2.5	1.5	(2)	0.0	(2)
Total	Percent	100.0	100.0	100.0	(2)	100.0	100.0	(2)	100.0	(2)
Method of transport of beef cattle turnoff sold on property:										
Method unknown	Percent	18.8	17.9	4.7	(2)	0.0	2.7	(2)	29.8	(2)
Road	Percent	45.0	75.1	73.9	(2)	23.9	95.2	(2)	33.5	(2)
Rail	Percent	3.5	3.4	8.2	(2)	0.0	0.0	(2)	2.2	(2)
Droving	Percent	9.8	0.5	12.3	(2)	42.3	2.2	(2)	25.9	(2)
Road/Rail	Percent	9.9	3.0	0.9	(2)	1.8	0.0	(2)	8.7	(2)
Droving/Rail	Percent	9.1	---	---	(2)	0.0	0.0	(2)	0.0	(2)
Droving/Road	Percent	1.5	---	---	(2)	3.0	0.0	(2)	0.0	(2)
Droving/Road/Rail	Percent	2.3	---	---	(2)	29.1	0.0	(2)	0.0	(2)
Total	Percent	100.0	100.0	100.0	(2)	100.0	100.0	(2)	100.0	(2)
Average distance traveled	Miles	184	54	91	(2)	673	48	(2)	119	(2)

[1] During period of survey the entire Northern Territory had only 6,000 acres in crops. Virtually entire acreage of properties in natural grasses and herbages. [2] Not available.

Source: The Australian Beef Cattle Industry Survey 1962-63 to 1964-65, Bureau of Agricultural Economics, Canberra, Australia, April 1970.

The average number of beef cattle per property ranged from 154 in South Australia to nearly 10,000 in the Kimberley area of Western Australia. The stocking rate ranged from an average of about 125 acres per animal in the Northern Territory to 4 to 7 acres per animal in the southern States.

Branding rates (which are indicative of calving percentages) ranged from an average of 40 percent for properties in the Northern Territory to 70 percent in the southern states. The branding rate averaged 55 percent in Queensland and 51 percent in Kimberley. The turnoff rate ranged from an average of 13 percent in the Northern Territory and 62 percent in the southern states.

The survey estimate of annual net income of beef cattle properties over the 3-year period was US$9,464. The highest average net income was $28,246 in the Barkly Tableland region of the Northern Territory. All other regions in the Northern Territory had negative net incomes due partly to adverse seasonal conditions. Among the states, New South Wales had the largest average net income of $11,066. Properties in Victoria, South Australia, and the southwest region of Western Australia had net incomes below the Australian average.

The capital value of property averaged about $459,000 and $408,000 respectively in the Northern Territory and the Kimberley region, compared with almost $111,000 in Queensland and a range from $145,000 to $229,000 in the southern states. The capital value per cattle equivalent area was $41 in the Kimberley region compared to $121 in Queensland and between $337 and $721 in the southern states. The structure of capital values differed markedly between states and regions. In Kimberley and the Northern Territory, and to a lesser extent in Queensland, the value of beef cattle predominated; whereas, in the southern states land constituted most of the capital, reaching 80 percent of the total in Victoria.

Annual operating costs per property were higher in the northern "extensive" regions than in the southern "intensive" regions. Costs per cattle equipment were highest in the southern states, and the southern states also were among the highest in net return per cattle equivalent. However, in South Australia and New South Wales about 75 percent, and in Victoria 63 percent, of the income of beef properties were from sources other than beef cattle.

Gross returns per property were highest in areas with the largest holdings—the Northern Territory and Kimberley. Due to climatic conditions characterized by periodic draught, cattle ranchers in the Northern Territory and the Kimberley region assumed greater risks, as evidenced by the negative average net return for properties in most of the Northern Territory for the survey period.

Victoria, South Australia, and the southwestern region of Western Australia had relatively low rates of return to capital and management ranging between 2.4 percent and 3.2 percent. The average rate of return for both Queensland and New South Wales was 6.3 percent.

Land values have a marked affect on the rate of return to capital and management. Excluding land the highest rates of return to capital and management were recorded for New South Wales, Victoria, and Tasmania at between 12 percent and 14 percent. The Queensland rate rose to 8.9 percent excluding land, while there was no change in the other northern regions because land was assumed to have zero values for the purpose of the survey analyses.

The Bureau estimates of the financial results for 1967-68, based on survey data, revealed a markedly different ranking of States and regions by net income and by rate of return to capital and management compared with the average for the survey period.

In the southern States net income and rate of return to capital and management were estimated by the Bureau to be less in 1967-68 than during the 1963-65 fiscal years. These results were caused largely by differences between southern States and northern Australia in changes of gross returns from 1963-65 to 1967-68. In the southern States rises in cost range from 13 to 19 percent and returns of less than 10 percent. In the Northern Territory costs rose by 27 percent while returns increased by 38 percent. The increase in cost for the Northern Territory was substantially influenced by increase in wage rates. Increased returns also outpaced rising costs in the Kimberleys and in Queensland, and net income rose by an estimated 50 percent in each of those areas.

The differences in the growth of returns between the south and north were caused primarily by greater reliance on sheep as a source of income in the south. Sheep and wool prices fell between 1963-65 and 1967-68, while beef prices rose considerably.

THE SHEEP INDUSTRY

Australia is the world's largest producer of wool, with about 15 percent of the world's sheep producing about 25 percent of the world's wool. Approximately 75 percent of the Australian clip is Merino, accounting for about 50 percent of the world's Merino wool production. Only the USSR produces more sheepmeats, while New Zealand is the only country exporting more lamb and mutton.

The Australian Merino, as a wool producing animal, is well suited to hot, dry regions. Merino wethers, selected for wool production from young stock produced in the agricultural districts, easily adapt to the environment of the outback areas. Perhaps one-third of the annual wool clip comes from outback properties where the entire flock consists of wethers and wool is virtually the only farm enterprise. Approximately another one-third of the wool clip, which is also Merino, comes from properties where the climate and vegetation is more suitable for sheep than any other kind of livestock. The remaining portion of the Merino wool represents about 8 percent of the total clip and comes from the purebred flocks and other specialized farms in the better agricultural districts.

British breeds, of which there are many, and crossbred sheep account for about 25 percent of the annual wool clip. These breeds are found largely in the mixed farming districts generally suitable for dairying and specialized crop production.

British breed rams, such as the Border Leicester, are mated to Merino ewes. The males from the cross are fattened and slaughtered for lamb production. The females are retained and mated to other British breed rams to produce lambs which are fattened and slaughtered for lamb production. Crossbreeding for lamb production has led to the establishment of a number of specialized farms, some of which produce crossbred ewes to sell to fat lamb producers.

Crossbreeding of British breed sheep, with Merino's, as has happened in other countries, has resulted in new breeds generally classified as dual-purpose sheep. The Corriedale and the Polworth breeds have been developed in this way in Australia.

Sheep producing areas

The sheep producing districts can be divided into three major zones: the pastoral zone, the wheat-sheep zone, and the high rainfall zone.

The pastoral zone covers 1,600 million acres, nearly 50 percent of the total area of Australia. The wheat-sheep zone covers 175 million acres, 9.2 percent of the total area of Australia; while the high rainfall area covers 126 million acres, or 6.6 percent of the total area of Australia. However, the area used for livestock and other agricultural purposes in these three zones covers only about 942 million acres, 132 million acres, and 75 million acres, respectively.

The wheat-sheep zone has nearly 40 percent of the nation's sheep, while the remaining 60 percent is about equally divided between the pastoral and the high rainfall zones. Merino sheep are found in all three zones; but generally Merino wethers for wool production are found in the pastoral zone, while crossbreed sheep and fat lamb production are confined to the better agricultural districts of the high rainfall zone and to districts in the wheat-sheep zone where the rainfall is more dependable and relatively high. In the wheat-sheep zone, grain is the major enterprise.

Rainfall. In the pastoral zone rainfall is low and unreliable. In the Queensland portion the average annual rainfall varies between 10 and 25 inches, its incidence being mainly in the winter. In New South Wales, the average rainfall ranges from 5 to 8 inches. In the eastern portion of the pastoral zone, summer rains predominate in the north and winter rains in the south; and the South Australian portion of the zone has an average rainfall of 5 to 8 inches, mostly winter rains. In the Western Australian portion of the zone the average rainfall ranges from less than 15 inches in the southwest to as high as 25 inches in the western Kimberleys.

Rainfall in the wheat-sheep zone generally ranges from 15 to 20 inches, but some districts with high incidence of summer rainfall average 30 inches. In the Queensland and New South Wales portions of the zone, the average rainfall ranges between 15 and 30 inches, with lower rainfall in the western part and higher rainfall occurring towards the eastern side. The rainfall for this portion of the zone is distributed throughout the year, but summer rains are more predominate in northern New South Wales and all of the Queensland portion of the zone. The range in average rainfall for portions of the zone in other States is from 10 to 20 inches with a long-term average of about 15 inches. Winter rains predominate in Victoria while virtually all of the rainfall occurs during the winter in the South Australian and Western Australian portions of the zone.

The average rainfall for the high rainfall zones ranges from about 20 inches in Victoria and South Australia to 50 inches in parts of Tasmania. In Western Australia annual rainfall ranges from 40 inches in the southwest coastal areas to 18 inches on the inner fringes of the zone.

Temperatures. Directly contributing to or distracting from the effectiveness of rainfall, temperatures vary from zone to zone as well as within the zones. For example, in the Victoria and South Australian portion of the high rainfall zone, there are no extremes in temperature. Therefore, an average of 20 inches of rainfall in this part of Australia is adequate for crop and forage production. The mean annual temperature for this portion of the zone varies from 54 degrees F. to 60 degrees F.

In contrast, much of the pastoral zone has a relatively high temperature. The mean maximum temperature in January is above 90 degrees F. The mean annual temperature is 70 degrees F. in central Queensland and 80 degrees F. in the Western Kimberley area.

The mean monthly temperature range in the sheep-wheat zone varies from 65 degrees to 80 degrees F. during January, and falls to 45 degrees to 55 degrees F. in July. The January mean maximum temperatures rise to over 90 degrees F. on the arid fringes and northern portions of the zone.

Grazing conditions. Determined largely by climate, grazing conditions also vary between zones as well as within zones.

Almost the entire area of the pastoral zone is used for livestock grazing. In much of the zone drought resistant perennials and other native grasses (including annuals) provide much of the forage for livestock. In the Queensland portion of the zone the drought resistant Mitchell and Flinders grasses have perennial rootstocks which allow them to take immediate advantage of rain when it falls. In southern Queensland and in much of the New South Wales and South Australian portions of the zone, edible shrubs and trees as well as native grasses provide valuable forage for livestock. In the Western Australian portion of the zone grazing consists of drought resistant perennials and some

herbs; but the perrennial grasses in this area have deteriorated over the years, carrying capacity has declined, and land is more susceptible to drought and soil erosion.

In the wheat-sheep zone about 80 percent of the occupied area is used for livestock grazing, a little over 50 percent is in native pastures, and the area in improved pastures is near 30 percent. Grain crops are grown on an average of about 18 percent of the land, while 2 percent of the occupied area is not used. Pasture improvement generally includes a phosphate fertilizer program and the seeding of a legume, such as subterranean clover, in either native pastures or with an improved variety of grass. Also, the cropland and the improved pasture usually are included in a pasture-crop rotation system of farming. This system greatly enhances the carrying capacity of pastures, and also is beneficial for crops in terms of grain yields per acre.

Improved pastures account for about 57 percent of the occupied area in the high rainfall zone. Much of the pasture improvement in the zone has been accomplished simply by top dressing native pastures with phosphate fertilizer. Pasture-crop rotation is limited, since crops account for only about 6 percent of the occupied area. About 33 percent of the zone is natural pasture.

Numbers and slaughter trends

The number of sheep and lambs in Australia totaled 180 million in 1970 compared with 174.6 million in 1969 and 157.6 million in 1966. The 1970 numbers were 12 percent above the 1961-65 average and 21 percent above the 1956-60 average. Drought appears to have been the only phenomenon that has periodically interrupted the long-term upward trend in sheep numbers. Recovery and increases in numbers to new record levels occurred following the 1965-66 drought.

Australia's sheep and lambs: Number and slaughter

Year	Number on farms[1]	Total slaughter[2]	Slaughter as percent of number
Average:	*1,000 head*	*1,000 head*	*Percent*
1956-60	149,220	27,810	18.6
1961-65	160,924	33,305	20.7
Annual:			
1966	157,563	34,560	21.9
1967	164,237	32,496	19.8
1968	166,912	38,008	22.8
1969	174,602	36,712	21.0
1970	180,079	42,213	23.4

[1] March 31 Census. [2] Year ending June 30.

Recent increases in numbers of sheep occurred at a time when wool prices were falling to their lowest levels in more than two decades. The number will likely continue to rise in spite of disastrously low prices at present, but perhaps more slowly. Sheep are grazed extensively in areas, primarily the pastoral zone, which are not suitable for other types of livestock. This is indicated by the fact that the number of wethers, which are grazed almost exclusively in many of the drier areas, appear to have stablized at about 45 million head. Wethers (1 year and over) accounted for 29 percent of the total number of sheep in the 1970 census. In the late 1950's wethers accounted for over one-third of the national flock.

Although cattle often are run with sheep, most of the wheat-sheep zone is better suited to the raising of sheep than cattle. However, with continued expansion of improved pastures and the rotation of land between pasture and grain production, both sheep and cattle numbers will continue to increase in the wheat-sheep zone.

Sheep producers in the better agricultural districts of the high rainfall zone have some difficult decisions to make in terms of what type of livestock to raise. Most of the producers likely will continue to raise sheep even though, like their counterparts in the wheat-sheep zone, they generally run a few head of cattle with sheep. An immediate shift to specialized beef production would be expensive because breeding stock is costly and the acreage required for economical production of beef is generally larger than the existing properties of most sheep producers.

Another alternative is to raise dual purpose sheep and hope for increased income from the combination of wool and lamb sales. A trend toward more fat lamb production has been underway for a number of years and is reflected in the sheep census. Breeding ewes (1 year and over) totaled 85.5 million in 1970 compared with 83.6 million in 1969 and 73.6 million in 1966. However, seasonal conditions on a particular property determine whether or not ewes are mated with rams during the breeding season. For example, the number of lambs marked during the season indicate that about 65 percent of the breeding ewes weaned a lamb in 1970 compared with 61 percent in 1969 and 55 percent in 1966.

Slaughter of sheep and lambs has been increasing in recent years at a rate slightly in excess of the rise of total inventory numbers. Slaughter was equivalent to 23.4 percent of the inventory numbers in 1970 compared with 21 percent in 1969 and an average of 20.7 percent during 1961-65. However, lamb slaughter, relative to the total slaughter of sheep and lambs, varies from year to year. Although more lambs were marked during the season, lamb slaughter accounted for only 47 percent of the total slaughter in 1970, compared with 50 percent in 1969. Lamb slaughter accounted for an average of about 43 percent of the total sheep and lamb slaughter for 1961-65.

Mutton and lamb production

The long term upward trend in mutton and lamb production had been characterized by relatively large increases over short periods and even greater year-to-year fluctuation than occur in beef and veal output. During the 1969-70 season, mutton production was 19 percent and lamb 40 percent larger than the 1961-65 average.

Mutton production has remained at a more constant level than that of lamb. For example, mutton production did not change significantly during the 5 years beginning with the 1959-60 season. In contrast, lamb production increased by about 9 percent during the same 5-year period. The upward trend in lamb production was interrupted by the 1965 drought, but was resumed during the 1966-67 season. Mutton production has continued to be characterized by year-to-year fluctuations.

Financial aspects

The Bureau of Agricultural Economics periodically publishes survey reports on the Australian sheep industry. One of the more comprehensive reports covers the years 1960-61 through 1962-63. The main body of this report, which presents the basic results of the survey, is contained in three sections, each dealing with one of the three sheep producing zones. Within each section, analyses were presented by State, enterprise, flock size, and year. Useable information was obtained from 576 properties to obtain estimates pertaining to the Australian sheep industry as a whole or to designated sections of it.

The value of land and improvements for the survey period averaged 67 percent of the total capital of sheep properties in the pastoral zone compared with 72 percent in the wheat-sheep zone and 74 percent in the high rainfall zone. Land constituted a smaller share of the total capital in the pastoral zone because a large portion of the zone is in Western Australia where land has only a nominal value.

The value of livestock represented about 26 percent of the total capital of sheep properties in the pastoral zone, compared with 14 percent in the sheep-wheat zone and 16 percent in the high rainfall zone. Although sheep accounted for the major portion of the capital invested in livestock, the relative percentage of capital invested in cattle increased during the survey period for each of the three producing zones.

Both total costs and gross farm incomes were highest for large properties with extensive production, which are more generally located in the pastoral zone. Net farm income also was highest for sheep properties in the pastoral zone, averaging about US$17,000 in 1962-63. This was more than double the average net farm income for properties in the wheat-sheep zone and more than three times the net income recorded for properties in the high rainfall zone.

The sheep enterprise accounted for 91 percent of the gross returns of properties in the pastoral zone during 1962-63, compared with 50 percent for the wheat-sheep zone and 74 percent for the high rainfall zone. Grain crops accounted for nearly 40 percent of the gross returns of sheep properties in the wheat-sheep zone, while cattle accounted for 13 percent of the total returns of properties in the high rainfall zone.

The rate of return on capital was relatively good for properties in both the pastoral and the wheat-sheep zones, reaching 8.6 percent and 7.1 percent, respectively, in 1962-63. The rate of return for properties in the high rainfall zone reached 4.4 percent in 1962-63, but averaged only 3.4 percent for the 3-year period.

Data on net farm income and returns to capital for the survey period suggest that properties with less than 1,000 sheep were too small for economical production. Also, these data indicate that there were no significant

Australia's sheep farms: Capital structure, costs and returns per property, annual averages 1960-61, 1961-62, and 1962-63

Item	Unit	Pastoral zone			Wheat-sheep zone			High rainfall zone		
		1960-61	1961-62	1962-63	1960-61	1961-62	1962-63	1960-61	1961-62	1962-63
Capital structure:										
Land	Percent	38.7	39.4	39.9	56.8	55.4	55.0	60.3	59.4	58.9
Water facilities	Percent	9.5	9.3	9.1	3.8	3.8	3.7	2.4	2.4	2.3
Fencing	Percent	9.9	9.6	9.6	6.6	6.3	6.2	5.7	5.6	5.5
Buildings	Percent	8.9	8.8	8.8	7.3	7.3	7.3	7.6	7.5	7.4
Plant and equipment	Percent	7.3	7.3	7.1	12.3	13.0	13.5	9.1	9.0	9.1
Capital, excluding stock	Percent	74.3	74.4	74.5	86.8	85.8	85.7	85.1	83.9	83.2
Sheep	Percent	22.9	22.0	21.2	11.1	11.1	10.9	12.0	12.0	12.0
Cattle	Percent	2.6	3.4	4.1	1.9	2.9	3.3	2.8	4.0	4.7
Other stock	Percent	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Total stock	Percent	25.7	25.6	25.5	13.2	14.2	14.4	14.9	16.1	16.8
Total capital	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total capital	US $	168,603	171,826	172,811	83,329	85,061	86,155	75,411	76,790	78,577
Costs:										
Labor	Percent	36.4	35.9	36.0	24.8	25.4	24.8	26.7	26.7	26.5
Materials	Percent	22.0	21.3	21.4	36.7	36.3	36.7	36.0	36.2	36.5
Services	Percent	24.9	26.4	26.1	20.9	20.6	20.6	20.5	21.1	21.4
Rent	Percent	2.9	2.9	3.1	0.8	0.9	1.2	1.3	1.0	1.2
Depreciation	Percent	13.8	13.5	13.4	16.8	16.8	16.7	15.5	15.0	14.4
Total costs	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total costs	US $	23,240	23,935	23,809	9,950	10,426	10,925	7,642	7,907	8,442
Returns:										
Sheep enterprise	Percent	90.6	90.6	90.9	51.8	52.4	50.0	73.3	74.3	74.2
Cattle enterprise	Percent	8.3	8.4	7.8	7.9	7.7	6.5	16.0	14.1	13.4
Grain enterprise	Percent	1.1	1.0	1.3	36.2	35.3	39.1	4.7	5.5	6.7
Other enterprise	Percent	1.1	1.0	1.3	4.1	4.6	4.5	6.0	6.1	5.7
Total returns	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total returns	US $	34,468	36,504	40,671	16,477	16,821	18,943	11,760	12,002	13,849
Net farm income	US $	11,228	12,569	16,862	6,527	6,395	8,018	4,118	4,095	5,407
Operator's allowance	US $	1,861	1,931	1,931	1,861	1,931	1,931	1,861	1,931	1,931
Returns to capital & management	US $	9,367	10,638	14,931	4,666	4,464	6,087	2,257	2,164	3,476
Rate of return on capital	Percent	5.5	6.2	8.6	5.6	5.2	7.1	3.0	2.8	4.4

Source: The Australian Sheep Industry Survey 1960-61 to 1962-63, Bureau of Agricultural Economics, Canberra, Australia, May 1965.

Australia's sheep farms: Physical and production data per property, average 1960-61 through 1962-63

Item	Unit	Pastoral zone	Wheat-sheep zone	High rainfall zone
Land use:				
Grain crops	Percent	(1)	17.2	5.2
Other crops	Percent	(1)	0.2	0.7
Total crops	Percent	0.1	17.4	[2] 5.8
Improved pasture	Percent	0.6	26.9	57.1
Natural pasture	Percent	[2] 98.6	53.8	33.2
Total pasture	Percent	99.2	80.7	90.3
Area not used	Percent	0.8	1.8	3.9
Total area	Percent	100.0	[2] 100.0	100.0
Total area	Acres	53,099	2,377	1,188
Type of farm enterprise:				
Sheep only	Percent	78.2	12.3	53.8
Sheep-cattle	Percent	14.2	6.3	14.1
Sheep-grain	Percent	5.5	69.5	13.1
Sheep-other	Percent	2.2	12.0	18.9
Total	Percent	[2] 100.0	[2] 100.0	[2] 100.0
Type of sheep enterprise:				
Merino wool growing	Percent	96.1	58.2	43.6
Crossbred wool growing	Percent	2.2	7.0	17.6
Fat lambs	Percent	1.7	34.7	38.8
Total	Percent	100.0	[2] 100.0	100.0
Flock Size:				
200 - 499	Percent	---	25.2	26.1
500 - 999	Percent	3.7	31.0	30.4
1,000 - 9,999	Percent	16.1	28.8	28.9
2,000 - 4,999	Percent	39.9	13.6	12.7
5,000 - 9,999	Percent	29.7	1.2	1.8
10,000 -19,999	Percent	8.3	0.2	0.1
20,000 and over	Percent	2.2	---	---
Total	Percent	[2] 100.0	100.0	100.0
Total	Number	5,753	1,365	1,385
Production from sheep enterprise:				
Wool produced	Pounds	58,184	11,012	13,202
Ewes mated as percent of flock	Percent	43.3	49.4	38.7
Lambing percentage	Percent	64.5	74.8	81.4
Lambs marked	Number	1,607	401	437
Sheep and lambs purchased	Number	506	210	191
Fat lambs sold	Number	23	200	165

[1] Not available. [2] Individual items do not add to total due to rounding.

differences which could be attributed to flock size in the rate of return on capital for properties with 1,000 or more sheep. However, net farm income per property did increase progressively with the size of the flock.

A comparison of the result of the 1961-63 survey with the previous 3-year period revealed significant increases in net farm income for properties in each producing zone. Average net farm income between the two 3-year periods rose by 36 percent for the pastoral zone, 63 percent for the wheat-sheep zone and 35 percent for the high rainfall zone. Average capital investment of properties did not change significantly between the two periods; therefore, the average rate of return on capital showed substantial increases. The rate of return on capital increased from 4.8 percent to 6.8 percent for the pastoral zone, from 3 percent to 6 percent for the wheat-sheep zone, and 2.3 percent to 3.4 percent for the high rainfall zone.

The generally favorable weather which prevailed in the pastoral zone during the 1960-61 to 1962-63 survey period contributed to the increase in net farm income. The number of sheep shorn and yield of wool per sheep were higher by 7 percent and 4 percent, respectively, than in the previous 3-year period. Although wool prices declined by

Australia's sheep farms: net farm income and returns to capital per property, averages 1960-61, 1961-62 and 1962-63

Item	Unit	Number of Sheep							Zonal average
		200-499	500-999	1,000-1,999	2,000-4,999	5,000-9,999	10,000-19,999	20,000 and over	
Pastoral zone									
Total capital	U.S. $	---	34,252	67,946	124,232	213,503	348,658	744,764	171,308
Total returns	U.S. $	---	5,839	12,499	26,404	49,183	77,103	148,694	37,215
Total costs	U.S. $	---	4,066	6,984	16,110	31,914	49,473	102,834	23,663
Net farm income	U.S. $	---	1,773	5,515	10,294	17,269	27,630	45,860	13,552
Operator's allowance	U.S. $	---	1,908	1,908	1,908	1,908	1,908	1,908	1,908
Return to capital and management	U.S. $	---	-135	3,607	8,386	15,361	25,722	43,952	11,644
Rate of return on capital	Percent	---	-0.4	5.3	6.7	7.2	7.4	5.9	6.8
Wheat-sheep zone									
Total capital	U.S. $	38,461	62,827	90,092	170,762	393,713	673,049	---	84,886
Total returns	U.S. $	7,029	13,592	19,134	32,963	90,326	127,202	---	17,413
Total costs	U.S. $	4,653	8,190	11,315	19,618	49,433	74,270	---	10,433
Net farm income	U.S. $	2,376	5,402	7,819	13,345	40,893	52,932	---	6,980
Operator's allowance	U.S. $	1,908	1,908	1,908	1,908	1,908	1,908	---	1,908
Return to capital and management	U.S. $	468	3,494	5,911	11,437	38,985	51,024	---	5,072
Rate of return on capital	Percent	1.2	5.6	6.6	6.7	9.9	7.6	---	6.0
High rainfall zone									
Total capital	U.S. $	35,469	52,803	82,665	160,346	387,639	503,100	---	76,910
Total returns	U.S. $	4,666	9,182	13,356	27,005	65,498	78,818	---	12,537
Total costs	U.S. $	3,472	5,879	8,010	16,927	44,348	53,573	---	7,997
Net farm income	U.S. $	1,194	3,303	5,346	10,078	21,150	25,245	---	4,540
Operator's allowance	U.S. $	1,908	1,908	1,908	1,908	1,908	1,908	---	1,908
Return to capital and management	U.S. $	-714	1,395	3,438	8,170	19,252	23,337	---	2,632
Rate of return on capital	Percent	-2.0	2.6	4.2	5.1	5.0	4.6	---	3.4

Source: The Australian Sheep Industry Survey 1960-61 to 1962-63, Bureau of Agricultural Economics, Canberra, Australia, May 1965.

2 percent, returns from wool increased by 9 percent. Returns from cattle trading rose by 53 percent compared with the previous 3-year period.

In the wheat-sheep zone the average return from the sheep enterprise was slightly less in the 1960-61 to 1962-63 period than in previous 3 years. However, returns from cereals—which accounted for more than one-third of the total return—increased by 68 percent. Returns from cattle increased by similar proportions but represented only 7 percent of total returns.

In the high rainfall zone average return from the sheep enterprise was 12 percent more in the 1960-61 to 1962-63 period than in the previous 3 years. Returns from cattle trading increased 69 percent.

Data on the capital structure, costs and returns for sheep farms from surveys of the Bureau of Agricultural Economics for 1963-64 through 1966-67 illustrate the changing fortunes of the Australian sheep industry. The 1963-64 season was a profitable one, while 1964-65 was considerably less profitable; and in 1965-66, drought further reduced the average net farm income of sheep producers. The 1966-67 season was a relatively profitable one.

More recent data are not currently available. However, low wool prices undoubtedly resulted in unfavorable financial conditions for many Australian sheep farms during the 1970-71 seasons.

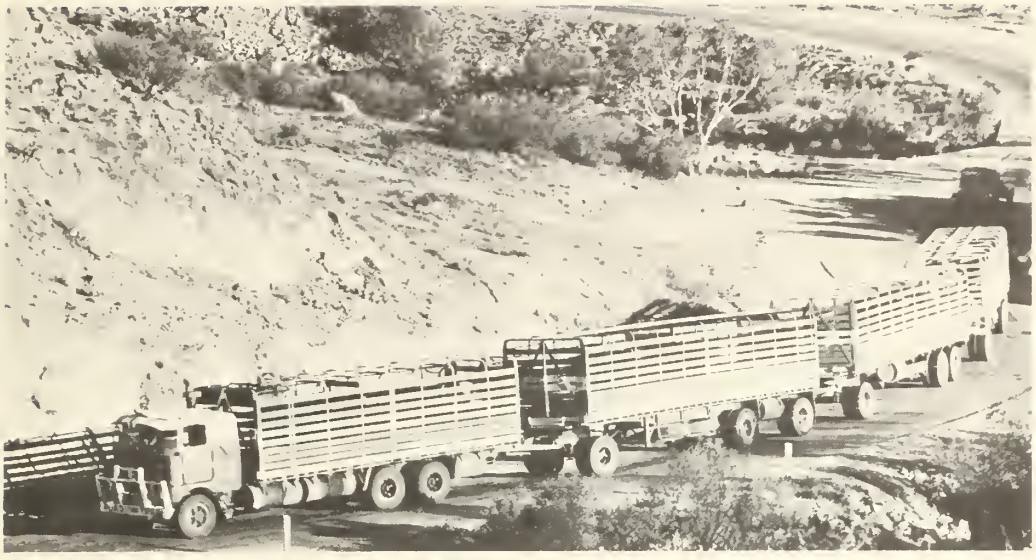
Australia's sheep farms: Capital structure, costs and returns by sheep producing districts

Item	Unit	Pastoral zone				Wheat-sheep zone				High rainfall zone			
		1963-64	1964-65	1965-66	1966-67	1963-64	1964-65	1965-66	1966-67	1963-64	1964-65	1965-66	1966-67
Capital structure:													
Land	Percent	41.5	42.9	44.0	45.6	54.2	56.0	55.5	55.7	57.3	57.7	56.7	56.2
Water facilities	Percent	8.7	8.1	8.3	8.7	3.8	3.3	3.2	3.3	2.3	2.1	2.2	2.3
Fencing	Percent	8.9	8.3	8.4	8.6	6.1	5.6	5.5	5.4	5.3	5.1	5.0	4.8
Buildings	Percent	8.6	8.3	8.6	9.0	7.6	6.9	7.0	7.1	7.2	7.3	7.3	7.5
Plant and equipment	Percent	7.3	7.6	8.3	8.5	14.4	14.8	15.5	15.6	9.5	10.0	10.2	10.3
Capital, excluding stock	Percent	75.0	75.2	77.6	80.4	86.1	86.6	86.7	87.1	81.6	82.2	81.4	81.1
Sheep	Percent	20.4	19.6	18.0	15.8	10.5	10.3	10.5	10.3	12.9	12.8	13.7	13.8
Cattle	Percent	4.4	5.0	4.2	3.6	3.3	2.9	2.6	2.4	5.4	4.9	4.8	5.0
Other stock	Percent	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Total stock	Percent	25.0	24.8	22.4	19.6	13.9	13.4	13.3	12.9	18.4	17.8	18.6	18.9
Total capital	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total capital	US $	180,130	185,084	180,434	173,590	86,805	94,613	98,376	100,440	76,667	88,126	90,058	92,775
Costs:													
Labor	Percent	38.0	32.9	30.6	32.8	25.9	23.8	23.5	23.3	28.0	25.6	25.0	25.1
Materials	Percent	23.0	25.9	27.6	22.6	36.4	36.8	37.5	38.8	38.4	37.2	38.0	38.6
Services	Percent	24.3	26.9	26.8	28.8	19.0	22.1	20.4	21.8	18.7	22.3	22.3	22.1
Rent	Percent	2.4	2.5	2.3	2.6	1.8	0.6	0.7	0.4	1.2	1.4	1.2	1.1
Depreciation	Percent	12.3	11.8	12.7	13.2	16.9	16.7	17.9	15.7	13.7	13.5	13.5	13.1
Total costs	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total costs	US $	26,730	28,020	26,766	25,603	11,496	12,503	12,522	14,540	9,191	10,623	10,954	11,724
Returns:													
Sheep enterprise	Percent	91.9	90.7	90.6	85.3	53.1	50.8	55.1	46.7	80.7	76.6	74.0	72.0
Cattle enterprise	Percent	6.5	6.5	7.6	9.4	5.3	5.6	7.0	6.5	10.4	11.5	13.5	15.3
Grain enterprise	Percent	1.6	2.5	0.8	4.3	38.6	40.4	33.7	43.7	4.6	8.1	8.5	8.8
Other enterprise	Percent	-	0.3	1.0	1.0	3.0	3.2	4.2	3.1	4.3	3.8	4.0	3.9
Total returns	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total returns	US $	51,698	36,211	23,044	37,642	21,775	21,459	18,273	24,799	17,456	16,817	17,919	19,309
Net farm income	US $	24,968	8,191	-3,722	12,039	10,279	8,956	5,751	10,259	8,265	6,194	6,965	7,585
Operator's allowance[1]	US $	1,926	2,083	2,111	2,144	1,926	2,049	2,111	2,224	1,926	2,052	2,642	2,204
Returns to capital & management[2]	US $	23,042	6,108	-5,833	9,895	8,353	6,907	3,640	8,035	6,339	4,142	4,323	5,381
Rate of return on capital	Percent	12.8	3.3	-3.2	5.7	9.6	7.3	3.7	8.0	8.0	4.7	4.8	5.8

[1] Estimated–difference between net farm income and return to capital based on percentage return to capital. [2] Estimated–based on percentage return to capital and total capital.

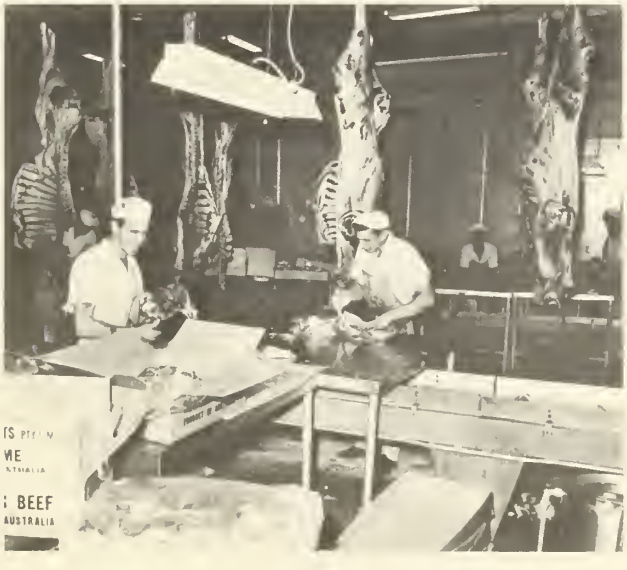
Source: The Australian Sheep Industry Survey 1963-64 to 1966-67, Bureau of Agricultural Economics, Canberra, Australia.

Above, an Australian driver chases a steer that has broken away from a herd of cattle. Left, Merino sheep are rounded up by riders; and, below, a more modern method of round-up. (All photos on these two pages are from Australian News an Information Bureau.)



An Australian "road train" (left travels along a highway in the Northern Territory to pick up a shipment of cattle. Below, Merino sheep are auctioned in New South Wales.

Below left, boneless beef is packaged for export in Western Australia. Right containers laden with meat for export are lifted onto a ship at Sidney, Australia.



THE HOG INDUSTRY

The number of hogs in Australia totaled 2.4 million in 1970, an increase of 6.4 percent over 1969 and 37 percent over 1966. Although hog numbers are relatively small in comparison with numbers of other livestock, the rise in hog numbers in recent years is more significant than increases in previous years. Recent increases have occurred in spite of a reduction in supplies of inexpensive feed, such as skimmed milk, from the dairy enterprise. Feedgrains are still relatively expensive, but hog production in the future will be even more dependent upon the supply and price of feed grain on the Australian domestic market.

Australian hog numbers and slaughter

Year	Number on farms[1]	Total slaughter[2]	Slaughter as percent of number
Average:	*1,000 head*	*1,000 head*	*Percent*
1956-60	1,325	1,945	146.8
1961-65	1,567	2,393	152.7
Annual:			
1966	1,747	2,769	158.5
1967	1,804	2,903	160.8
1968	2,056	3,049	148.3
1969	2,253	3,310	146.9
1970	2,398	3,593	149.4

[1] March 31 Census. [2] Year ending June 30.

Hog slaughter has risen in line with inventory numbers. Year-to-year changes in slaughter as a percentage of total numbers probably are due to production aspects other than productivity factors. Virtually all of the productivity gains that have occurred in hog production can be attributed to increases in average slaughter weight.

Pork production was equivalent to only 9 percent of Australia's total red meat production during the 1969-70 season. Nevertheless, the rate of increase for pork production has been greater than for other meat. This is partly because hog production is not adversely affected by drought; but most of the gain in pork output is due to a trend toward larger units and more commercialized production. Per capita supplies, of course, are still relatively low; therefore, Australia's domestic market offers producers a potential outlet for substantially larger production.

Australia's canned meat production by type[1]

Commodity	Average		1966	1967	1968	1969	1970[2]
	1956-60	1961-65					
	Mil. lbs.	*Mil. lbs.*	*Mil. lbs.*	*Mil. lbs.*	*Mil. lbs.*	*Mil. lbs.*	*Mil. lbs.*
Corned beef	37.4	19.3	16.1	15.3	10.8	10.7	9.9
Minced beef	20.2	8.5	9.4	5.4	12.3	6.5	6.1
Other beef	37.6	15.0	15.5	17.8	12.4	12.4	11.6
Mutton	21.6	13.4	7.6	6.8	6.8	7.8	7.1
Bacon and ham	7.9	8.0	9.9	11.3	10.7	11.3	10.2
Other pork	.3	.7	.4	.4	.3	.3	.4
Camp pie	10.0	10.1	12.1	10.9	9.6	7.9	7.8
Other mixed meat	9.2	8.3	6.9	7.1	9.4	9.4	8.8
Meat and vegetables	17.2	24.4	36.1	25.8	34.5	31.5	40.3
Total	161.4	107.7	114.0	100.8	106.8	97.8	102.2

[1] Year ending June 30. [2] Preliminary.

Source: The Beef Situation, Bureau of Agricultural Economics, Canberra.

Livestock transportation and sales

A major problem of the Australian livestock industry, almost equal to the difficulties of securing of adequate supplies of stock water, has been the lack of transport facilities. Large properties are spread across thinly populated areas, and ranchers traditionally have walked their stock great distances to market. Railways have been few and far between; while stock routes often were in bad condition, without feed or water in dry times or impassable in wet weather.

Rail and road transport facilities have been better in the more heavily populated southern areas and in parts of Queensland. In recent years the development of the road train has made a tremendous impact on transportation in the north. The federal Government, under the beef road scheme, has provided all-weather roads through important cattle areas which are not served by railways. These roads link up with rail heads where the cattle are off-loaded, watered, and fed before loading in rail cars for transport to market or slaughter plants.

During the 1962-63 to 1964-65 period nearly 10 percent of the cattle producers transported their cattle all the way to market by droving. An additional 14 percent moved their cattle part way to market by droving. The largest percentage, 45 percent, transported their cattle by road (truck); while another 10 percent transported by a combination of road and rail. Surprisingly, the method of transport was unknown for nearly 19 percent of the properties included in the 1962-63 to 1964-65 survey. Undoubtedly, road and road/rail transport currently move a larger percentage of Australian beef cattle to market than was the case during the mid 1960's.

Livestock auctions constitute the most common method of selling slaughtered stock. Both cattle and sheep are sold on a per head basis. Buyers at an auction sale may be representatives of processing organizations handling large quantities of meat for home and export markets or local butchers interested in purchasing only one or two animals to provide meat for their customers for a few days. Each buyer looks at the livestock for sale and, from his experience, estimates the total yield and likely quality they will provide. When the auctioneer calls for bids, the buyer prepared to pay the highest price obtains the stock provided his bid is above the seller's reserve price. However, due to the added expense, producers generally are reluctant to exercise their rights to retain ownership of stock when bids fall below established reserves. The competition for a particular day is established by the ratio of buyers, or buyer requirements, to total numbers of livestock offered for sale. This, and the fact that prices for live animals may not reflect actual differences in quality, has resulted in much controversy concerning the Australian auction.

It is only in recent years that scales have been installed in some Australian sales yards. Quotations for cattle, sheep, and hogs for principal markets generally are based on estimated dressed weight for stock sold on a per head basis. Consequently, some producers invite buyers to inspect their livestock in the paddock and negotiate sales on the farms. Others sell direct to processors on a "weight and grade" basis.

Wool is sold primarily at public auction which, since November 1970, comes under the watchful eye of the new statutory authority, the Australian Wool Commission. The principal function of the Commission is to operate a flexible price system for all wool presented for sale and normally held suitable for resale. The Commission establishes standards of clipped preparation submitted for auction and for wool sold outside the auction system. If a class of wool is being neglected at auction, the Commission has the power to sell that class of wool outside the auction system or have it processed.

In the Commission's operation of the flexible reserved price system, it has the power to buy and sell wool at its own discretion. In this way the Commission can dispose of stock, give special attention to "neglected" wool, and support wool prices. Financial backing for the Wool Commission is provided by the Australian Commonwealth Government.

During 1969-70 season wool prices fell to their lowest level in 22 years. A general decline occurred in world prices of wool over a period of more than two decades primarily because of large wool production combined with intensified competition from even more rapidly expanding supplies of man-made fibers.

Australia's wool prices: season average auction price, greasy basis, for all selling centers

Season[1]	Price
	U.S. cents per pound
Average:	
1956-60	57.85
1961-65	54.55
Annual:	
1966	56.09
1967	53.07
1968	46.76
1969	50.03
1970[2]	43.68
1971[3]	33.40

[1] Year ending June 30. [2] Preliminary.
[3] Estimate based on first 11 months of 1970-71 season.

Source: National Council of Wool Selling Brokers; Commonwealth Bureau of Census and Statistics.

Australia's cattle prices: Steers yielding 650-700 pounds, 1st and 2nd export quality, average monthly prices, dressed weight basis, at Brisbane and Sydney markets

Market and month	Average 1961-65	1966	1967	1968	1969	1970
	U.S. dol. per 100 lb.	*U.S. dol. per 100 lb.*	*U.S. dol. per 100 lb.*	*U.S. dol. per 100 lb.*	*U.S. dol. per 100 lb.*	*U.S. dol. per 100 lb.*
Brisbane (Cannon Hill):						
January	21.08	26.21	29.81	29.75	30.73	31.14
February	19.78	26.32	28.56	29.96	29.68	31.85
March	19.45	25.89	29.12	28.90	28.45	32.05
April	22.35	26.94	28.17	29.19	29.25	31.08
May	19.79	25.89	27.08	30.03	29.96	30.91
June	22.31	27.57	29.12	30.52	31.21	31.43
July	19.73	27.07	29.27	30.31	30.84	31.21
August	21.04	28.28	29.25	30.46	29.23	31.80
September	21.86	29.25	28.56	29.25	29.12	33.19
October	22.31	29.29	27.93	28.21	29.25	34.63
November	21.48	27.72	27.93	28.45	30.74	34.46
December	22.25	27.70	27.83	29.49	30.15	33.83
12-month average	20.66	27.35	28.62	29.55	29.87	32.44
Sydney (Homebush):						
January	21.50	27.01	28.29	29.12	29.90	29.65
February	21.28	26.19	28.60	28.84	30.20	30.16
March	20.79	27.12	28.90	29.25	29.65	30.80
April	20.82	28.56	29.16	29.97	29.84	30.54
May	21.09	26.34	27.87	29.24	29.03	30.15
June	22.28	28.00	28.95	30.86	29.40	30.82
July	22.18	28.80	30.23	32.57	28.74	30.80
August	23.61	29.24	30.08	32.27	28.56	29.79
September	23.95	29.92	30.78	30.69	27.68	31.97
October	22.97	29.83	29.47	29.66	27.66	32.45
November	22.06	29.23	27.96	27.50	29.06	31.53
December	21.87	28.46	27.76	28.28	28.56	31.65
12-month average	21.56	28.22	29.01	29.88	29.02	30.98

Source: Australian Meat Board

Australia's lamb prices: lambs yielding 29-36 pounds, 1st and 2nd export quality, average monthly prices, dressed weight basis, at Melbourne and Sydney markets

Market and month	Average 1961-65	1966	1967	1968	1969	1970
	U.S. cents per lb.	*U.S. cents per lb.*	*U.S. cents per lb.*	*U.S. cents per lb.*	*U.S. cents per lb.*	*U.S. cents per lb.*
Melbourne (New Market):						
January	18.5	20.4	21.2	19.9	17.7	19.4
February	21.5	22.2	23.5	21.3	19.4	20.4
March	22.4	25.1	24.1	22.8	21.3	21.7
April	22.7	25.8	25.6	29.1	21.3	24.1
May	23.9	23.5	25.0	31.1	19.5	22.7
June	27.3	21.8	26.5	28.9	19.7	21.3
July	26.0	20.2	31.6	25.2	21.5	20.3
August	24.6	22.7	33.6	21.3	19.0	17.8
September	21.1	19.9	24.6	15.3	18.6	17.1
October	17.4	19.3	19.0	14.9	17.5	16.4
November	16.1	18.8	16.4	15.0	17.1	15.2
December	17.0	18.7	18.6	16.5	16.7	15.2
12-month average	21.5	21.5	24.1	21.8	19.1	19.3
Sydney (Homebush):						
January	19.4	22.9	23.0	24.4	18.7	19.0
February	19.7	22.9	24.8	21.6	20.5	19.7
March	19.8	27.2	25.0	20.8	21.5	19.4
April	20.6	28.3	23.5	22.7	21.3	21.4
May	22.2	25.2	23.0	23.7	19.4	21.8
June	23.9	23.6	26.2	24.3	19.6	21.1
July	24.1	22.0	28.3	23.5	19.7	19.9
August	23.9	23.3	28.9	21.6	19.8	17.0
September	23.1	24.3	27.3	18.3	20.1	16.7
October	19.4	21.1	21.8	16.8	17.1	15.5
November	20.6	21.2	18.9	16.8	18.7	15.0
December	19.7	22.1	19.6	17.7	18.3	14.9
12-month average	21.2	23.6	24.2	21.1	19.6	18.6

Source: Australian Meat Board

Australia's sheep prices: wether and/or maiden ewe yielding 40-50 pounds, export quality, average monthly prices, dressed weight basis, at Brisbane and Sydney markets

Market and month	Average 1961-65	1966	1967	1968	1969	1970
	U.S. cents per lb.	*U.S. cents per lb.*	*U.S. cents per lb.*	*U.S. cents per lb.*	*U.S. cents per lb.*	*U.S. cents per lb.*
Brisbane (Cannon Hill):						
January	12.2	14.9	14.6	11.0	9.4	11.3
February	10.5	14.3	13.9	10.8	8.0	11.0
March	10.4	12.3	13.9	9.1	6.3	9.7
April	10.4	11.0	12.9	8.7	8.1	9.3
May	9.8	11.1	11.7	9.7	8.6	9.2
June	10.7	12.2	13.6	11.0	9.4	8.5
July	10.8	13.7	14.6	11.2	9.1	9.9
August	12.5	16.8	13.0	10.3	8.1	9.2
September	12.1	18.4	11.4	10.3	8.9	9.6
October	12.6	16.6	11.0	9.6	9.9	9.2
November	12.7	14.0	10.8	9.1	11.9	8.6
December	13.5	14.1	9.7	8.6	11.9	8.1
12-month average	12.7	14.1	12.4	10.0	9.1	9.8
Sydney (Homebush):						
January	10.1	12.1	14.1	10.4	9.6	11.1
February	9.4	11.2	13.0	8.7	8.3	10.6
March	8.9	11.9	13.4	8.2	8.5	9.9
April	9.0	12.3	13.0	9.4	10.1	10.6
May	9.9	12.1	12.7	12.4	10.5	10.4
June	11.2	13.4	13.2	11.8	12.5	10.4
July	11.5	13.3	13.8	11.5	10.6	8.0
August	11.9	13.7	14.2	11.1	11.1	9.0
September	12.5	15.1	13.1	10.0	11.2	11.3
October	10.7	13.6	10.5	9.6	11.0	10.8
November	10.0	13.6	9.4	9.7	11.1	9.9
December	10.4	13.9	8.9	9.9	11.3	9.8
12-month average	10.4	13.0	12.4	10.1	10.4	9.8

Source: Australian Meat Board.

Australia's hog prices: hogs yielding 140-150 pounds, 1st and 2nd export quality, average monthly prices, dressed weight basis, at Brisbane and Sydney markets

Market and month	Average 1961-65	1966	1967	1968	1969	1970
	U.S. cents per lb.	*U.S. cents per lb.*	*U.S. cents per lb.*	*U.S. cents per lb.*	*U.S. cents per lb.*	*U.S. cents per lb.*
Brisbane (Cannon Hill):						
January	27.5	28.0	31.9	31.4	27.8	30.7
February	25.9	26.9	32.3	30.2	26.9	29.8
March	25.4	28.3	32.5	31.3	27.0	29.9
April	25.3	27.8	30.9	30.9	27.7	29.6
May	26.9	28.0	30.5	29.1	29.6	30.0
June	28.8	30.4	32.9	30.4	29.9	31.8
July	29.7	30.8	33.2	29.7	31.7	32.8
August	30.4	33.4	32.8	27.2	29.7	32.2
September	30.1	33.3	34.8	26.1	30.4	34.0
October	31.3	33.2	36.0	26.8	32.9	34.0
November	28.5	31.4	34.3	27.0	32.3	34.4
December	28.3	32.0	33.4	28.5	31.0	33.9
12-month average	28.0	30.2	33.2	29.0	29.7	32.1
Sydney (Homebush):						
January	27.1	28.0	32.8	30.7	27.0	28.9
February	22.6	27.7	32.5	30.0	25.5	26.9
March	25.4	29.7	30.8	30.2	26.9	26.4
April	25.7	28.6	29.9	30.4	28.2	25.5
May	25.2	27.4	29.1	28.6	29.3	25.8
June	25.8	28.3	32.1	30.7	29.6	26.2
July	27.1	29.0	33.4	30.0	28.3	26.9
August	28.9	28.1	33.8	29.7	27.7	28.2
September	28.3	29.0	34.8	27.1	27.2	29.2
October	28.0	28.6	36.1	26.0	29.1	30.4
November	26.5	32.4	32.9	25.1	29.1	29.8
December	27.0	31.9	33.0	27.8	28.2	29.1
12-month average	26.2	29.0	32.7	28.8	28.0	27.9

Source: Australian Meat Board.

Retail prices of selected Australian meats at Brisbane, Sydney, and Melbourne, annual 1968-69 and 1969-70[1]

Class and cut of meat	Brisbane		Sydney		Melbourne	
	1968-69	1969-70	1968-69	1969-70	1968-69	1969-70
	U.S. cents per lb.	*U.S. cents per lb.*	*U.S. cents per lb.*	*U.S. cents per lb.*	*U.S. cents per lb.*	*U.S. cents per lb.*
Beef:						
Rib-without bone	58.8	62.5	60.0	61.6	69.9	71.7
Steak-rump	94.0	112.1	104.9	110.9	124.2	127.8
Steak-T-bone	N.Q.	83.6	N.Q.	93.7	N.Q.	97.8
Steak-chuck	55.0	58.1	54.5	56.6	58.4	58.9
Sausages	29.8	32.4	30.4	31.1	35.2	31.6
Silverside-corned	62.9	65.0	58.5	61.8	71.3	71.8
Brisket-corned	46.6	48.5	44.8	46.0	49.8	50.0
Mutton:						
Leg	35.0	38.9	34.2	34.6	31.9	31.1
Chops-loin	36.1	37.1	29.5	29.2	31.7	32.9
Chops-leg	37.9	38.2	30.7	31.4	35.3	35.7
Chops-forequarter	N.Q.	36.3	N.Q.	27.8	N.Q.	26.8
Lamb:						
Leg	54.5	56.8	46.5	49.3	46.6	46.5
Chops-loin	57.7	59.0	48.3	50.6	51.0	52.6
Chops-leg	57.7	58.8	51.2	53.3	53.3	53.5
Chops-forequarter	N.Q.	56.5	N.Q.	40.0	N.Q.	39.1
Pork:						
Leg	67.8	68.4	71.0	71.3	71.3	69.4
Loin	66.1	67.5	67.4	69.4	74.4	72.8
Chops	66.2	68.0	66.6	69.3	74.5	72.9

[1] Year ending June 30. [2] Without fillet.

Source: Commonwealth Statistician.

Meat grading

Meat grading standards based upon conformation, age, and fat cover are included in the Exports (Meat) Regulations; and grading is supervised by the Department of Primary Industry. All meat exported is designated for quality by a tag and/or the marking on the wrap or container. The tag and/or product lettering are blue for first quality, red for second quality, and white for third quality.

Beef for export is classified by quality and sex and is shipped either bone-in or boneless. The classes of beef exported are:

- Ox (steer): bone-in quarters (and cuts either bone-in or boneless)—1st, 2nd, and 3rd quality.
- Heifer: bone-in quarters (and cuts either bone-in or boneless)—1st and 2nd quality.
- Yearling beef: bone-in quarters—1st quality.
- Baby beef: bone-in quarters—1st quality.
- Cow: bone-in quarters (and cuts either bone-in or boneless)—1st, 2nd, and 3rd quality.
- Bull: bone-in quarters.
- Boneless beef (ox, heifer, cow and bull).
- "Plain" quality beef, as a special item not included above is permitted shipment to certain destinations.

Boneless beef cuts exported include virtually all cuts known in the meat trade. The principal cuts exported include: tenderloin, clod, cube roll, topside (round), thick flank, knuckle (thick flank, trimmed of the lymph gland, fat and "lip" muscle), striploin, rump, brisket (boneless—point-end or navel end), and skin and shank meat.

Veal graded for export is derived from carcasses of not more than 200 pounds. It is exported in carcasses and cuts as:

- 1st quality—from carcasses weighing 50-200 pounds
- 2nd quality—from carcasses weighing 50-200 pounds
- 3rd quality—from carcasses weighing 42-200 pounds

Boneless veal is derived from animals not less than 14 days old, yielding a carcass of not more than 200 pounds and a boneless side of not less than 10 pounds frozen weight. Bobby Veal, which is popular in most British Commonwealth countries, is an optional term for veal derived from carcasses of not more than 70 pounds dressed weight.

The Australian export lamb trade is based primarily on suckling lambs from 3 to 5 months of age. Carcass lamb and cuts are exported as first, second, or third quality with ciphers used to indicate weight ranges as follows:

	Weight	*Cipher*
1st and 2nd quality	Not over 28 lb.	D
	29-36 lb.	2
	37-42 lb.	8
	43-50 lb.	4
	Over 50 lb.	T
3rd quality	Not over 28 lb.	L
	Over 28 lb.	O

Australia also exports a small quantity of "summer lamb" derived from animals which have not cut a permanent incisor tooth, but are losing the distinctive characteristics of lamb. This product is so designated by trade descriptions or registered brand. Export of summer lamb is prohibited to the United Kingdom.

Australian hogget is the term used to describe carcasses of sheep which have lost the distinctive characteristics of lamb and do not have more than two permanent incisor teeth. Hogget carcasses and cuts are exported as first or second quality with ciphers used to indicate weight range as follows:

Weight	*Cipher*
Not over 36 lb.	2
37-42 lb.	8
43-50 lb.	4
Over 50 lb.	7

Mutton is derived from adult sheep and is classified as follows:

- Wether or maiden ewe carcasses—1st, 2nd, or 3rd quality.
- Ewe carcasses—2nd and 3rd quality.

Pork grades and standards have been established only for Queensland. In some of the other major producing areas, such as New South Wales, private companies have their own specifications which they use to determine quality and/or relative value of hog carcasses.

Queensland's grades and standards are as follows:

Grade	Dressed weight	Maximum mid loin fat	Maximum shoulder fat
	Pounds	*Inches*	*Inches*
Prime	100-125	¾	1¼
	126-145	1	1½
	140-160	1¼	1¾
1st grade	100-125	1	1½
	126-145	1¼	1¾
	140-160	1½	2
2nd grade.	100-125	1¼	1¾
	126-145	1½	2
	140-160	1¾	2¼
3rd grade	100-125	1½	2
	126-145	1¾	2½
	140-160	2	No maximum

Private companies in New South Wales normally pay top prices for hog carcasses with 3/4 inches or less mid-loin back fat and 125-130 pounds dressed weight. Price discounts are applicable to carcasses with an excess of back fat.

Since pork is consumed largely on the domestic market, most of the grading by both Government and private graders is done for the benefit of the home market. The reverse is true for beef, veal, mutton and lamb. Beef generally is not graded for the domestic market, while the grading of sheep meats has limited application for the domestic market.

Meat inspection

The Commonwealth Meat Inspection Service, Department of Primary Industry, is responsible for inspecting the animals slaughtered and the slaughter facilities producing meat for export. The slaughter animal and/or the meat for export is under the control of veterinary officers of the Department of Primary Industry from the time of ante-mortem inspection of the live animal, through slaughtering, treatment, refrigeration, packaging, and transportation until it is stored in the hold of an ocean liner.

MEAT CONSUMPTION TRENDS

There has been a slight downward trend in per capita consumption of red meat for more than 10 years. Substantial declines in per capita consumption of beef, veal, and mutton have not been offset by increased consumption of lamb and pork.

The decline in per capita consumption of beef and veal is attributable to the appreciable increases of prices of these meats. Beef prices have increased sharply since 1958 when large quantities of Australian beef began moving to the U.S. market. Prior to 1958 the United Kingdom was the only major export outlet for Australian beef. Australian Government and industry officials were willing to compromise on prices to obtain an assured market for the export surplus of beef. With the removal of commitment to export to the United Kingdom, however, Australian beef began moving to the higher priced U.S. market and Australian domestic prices rose accordingly.

Australia's estimated meat consumption, total and per capita by type, averages and annual[1]

Class of meat	Average		1966	1967	1968	1969[2]	1970[2]
	1956-60	1961-65					
Total consumption:	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*
Beef and veal (bone-in weight)	1,146	1,048	1,066	997	1,071	1,108	1,063
Mutton (bone-in weight)	519	570	529	484	497	513	467
Lamb (bone-in weight)	300	441	423	497	515	580	567
Pork (bone-in weight)	98	130	152	157	175	197	206
Variety meats	110	130	132	130	137	137	143
Canned meat (canned weight)	39	45	52	60	56	60	64
Bacon and ham (cured weight)	69	78	87	94	92	94	103
Total[3]	2,334	2,546	2,489	2,462	2,594	2,745	2,660
Per capita consumption:	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Beef and veal (bone-in weight)	117	97	93	85	90	91	85
Mutton (bone-in weight)	53	53	46	41	42	42	38
Lamb (bone-in weight)	31	41	37	43	43	48	46
Pork (bone-in weight)	10	12	13	13	15	16	17
Variety meats	11	12	12	11	11	11	12
Canned meat (canned weight)	4	4	5	5	5	5	5
Bacon and ham (cured weight)	7	7	8	8	8	8	8
Total[3]	239	231	216	210	217	225	214

[1] Year ending June 30. [2] Preliminary. [3] In terms of carcass weight, plus offal.

Source: Commonwealth Statistician.

INDUSTRY ORGANIZATIONS

The pastoral industry has a number of producer organizations which operate on a state, regional or national basis. The state and regional organizations generally are affiliated with one or more of the national organizations. The principal national organizations include the Wool Industry Conference, the Wool Board, the Wool Commission, and the Meat Board.

Wool organizations

Wool Industry Conference. The Australian Wool Industry Conference is a non-statutory body set up in 1962 by the federal organizations of wool growers. It comprises 25 members appointed by the Australian Wool Growers and Grazers Council, 25 appointed by the Australian Wool and Meat Federation, and five appointed by the Australian Primary Producers Union. The Conference appoints its own chairman.

The main functions of the Conference are: (1) to recommend to the Commonwealth Government the rate of levy to be paid each year by wool growers for promotion and research; (2) to recommend annually the apportionment of money contributed by wool growers and the Government for promotion and research; (3) to nominate the six wool grower members for appointment to the Australian Wool Board; (4) to submit a panel of names for the appointment of the three members with special qualifications on the Australian Wool Board; (5) to review annually the activities of the Wool Board; and (6) to resolve any matters referred to it by the Wool Board and to negotiate on behalf of wool growers with the Government on important policy matters.

Wool Board. The Australian Wool Board is a Commonwealth statutory body established under the Wool Industry Act, 1962-67. The Board is comprised of 11 persons—a chairman, nominated by the board; six wool growers, nominated by the Wool Industry Conference; three members possessing special qualifications, selected from a panel of names submitted by the Wool Industry Conference; and a Commonwealth Government representative.

The main functions of the Board are: (1) to carry out wool promotion in Australia and overseas (through the International Wool Secretariat); (2) to recommend to the Ministry for Primary Industry the annual budget for wool research and to administer the research programs; (3) to conduct a testing service for wool and wool products

(through the Australian Testing Authority); and (4) to investigate wool marketing and make recommendations to the Wool Industry Conference on this subject.

The Wool Board's activities are financed primarily from two sources—a statutory levy paid by wool growers for wool promotion and research and a Commonwealth Government contribution for these activities. The levy paid by growers normally is 2 percent of the gross proceeds from the sale of shorn wool (this may be reduced during periods of low prices), while the Commonwealth Government matches dollar per dollar the funds contributed by wool growers up to a maximum of 14 million dollars per annum. However, the Commonwealth contribution may be increased during periods when grower contributions are reduced.

Wool Commission. The Australian Wool Commission is a statutory authority established under the (Australian) Wool Commission Act of 1970. The Commission comprises a chairman and six members—two represent wool growers, three represent special interests, and one is a Commonwealth Government representative. The chairman of the Commission, upon appointment, automatically becomes a member of the Wool Board.

The Commission was established as a part of an industry and Government effort to alleviate a critical situation confronting the industry, caused mainly by low wool prices. It was instituted primarily for the purpose of operating a flexible reserve price system, a marketing intelligence unit, and a statistical service. On November 16, 1970, the Commission began operating a flexible reserve price scheme at auctions throughout the country.

Private firms continue to carry out the physical task of selling wool but under the watchful eye of the Commission. The Commission, after consultation with appropriate industry boards, sets the terms and conditions governing the sale of wool at auction and controls the auction sales rosters and offerings.

The Commission operates a price averaging plant for wool from 1-, 2-, and 3-bale lots. Also, it will operate voluntary pools for wool in excess of 3 bales when judged appropriate by the Commission. Advances are paid to producers included in the price averaging plan or to producers whose wool is neglected beyond its normal eligibility for sale at auction. The Commission has the authority to buy and sell wool outside the auction system or have it processed if the class of wool concerned is being neglected at auction. The Commission registers firms operating outside the auction system and provides a means of constantly reviewing the private buying and selling of wool.

The Commonwealth Government is prepared to provide any funds needed for the buying of wool by the Commission and for making advances to growers beyond the amounts which trading banks make available. The Government is committed to provide both working and operating capital as well as make good any losses incurred in the operation of the reserved price system.

The Meat Board

Established under the Meat Export Act of 1936, the Australian Meat Board is a Commonwealth statutory authority that currently operates under the Meat Industry Act of 1964-66. The Board comprises a chairman and eight members—five members represent livestock producers, two represent meat exporters, and one is a Commonwealth Government representative.

The Board is responsible for controlling the overseas marketing of beef, mutton, and lamb. Its primary function is to insure that meat exports are marketed in a manner which will safeguard the long term interests of the Australian meat industry. The Board advises the Government with regard to the establishment of policies and export marketing procedures deemed to be in the interest of the Australian meat industry. Overseas marketing of meat is regulated by the Board through a system of export licensing.

The Board has the power to promote meat both overseas and at home and to purchase and sell meat in certain circumstances. In addition to its Australian staff, the Board has representatives in London, New York, Tokyo, and Tehran. Officials stationed at these posts are regional representatives who, respectively, operate throughout Europe, North America, Asia, and the Middle East. They help organize the promotion of Australian meat and report back to the Board. A regular statistical review of Australian and overseas markets is maintained by the Board.

The activities of the Board are financed from a portion of the levy on cattle and sheep slaughtered for human consumption. About one-third of the levies collected are allocated to the Meat Board; the remaining two-thirds are paid into the meat research trust account and, together with matching funds contributed by the Commonwealth Government, used to finance meat research.

GOVERNMENT ASSISTANCE

The major contributions by the Commonwealth Government to the pastoral industry include expenditures for research, extension, and market promotion. The Government contribution for a particular industry activity normally is on a matching basis with producer funds. The principle of matching funds is departed from only in the case of wool; for wool research the Government provides $2 per each $1 of producers' funds. Also, in the case of wool the Government has, during periods of low prices, agreed to a reduction of the assessment against the growers and has increased the Government contribution.

The Commonwealth Government also assists livestock producers as well as other rural industries through tax concessions. These measures aim to reduce the cost and thus raise the post-tax profitability of investment outlays of producers. In addition, farmers may receive long-term loans under special programs to enable them to surmount unforeseen difficulties.

Research

Research programs have been enacted by the Commonwealth Parliament for five major agricultural industries. Two of the legislative acts are applicable to two pastoral products—wool and meat. Legislation also has been introduced to provide a Commonwealth/industry research program for the pig industry.

Most of the research relating to the pastoral industry is undertaken by the State Department of Agriculture, the Commonwealth Scientific Industrial and Research Organization, various universities, and the Bureau of Agricultural Economics. These institutions also conduct research with funds contributed for specific projects by foundations and private entities.

All of the administrative or "overhead" costs of operating a specific research project may or may not be financed by "matching funds." It is reasonable to assume that the Government has contributed considerably more than matching funds and, with increasing costs, the Government's share likely will increase. Most research can be deemed of value to all segments of the population. Therefore, efforts will be made to meet the expanding requirements of research institutions regardless of whether or not primary industries are able to continue the current "matching fund" arrangements.

Tax concessions

Primary producers are eligible for special tax consideration. The taxation law defines primary production as production resulting from: (1) the cultivation of land; (2) the maintenance of animals or poultry for the purpose of selling them or their bodily produce, including natural increase; (3) fishing operations; (4) forest operations.

One of the special tax concessions given to primary producers, under prescribed conditions and currently with less than $A16,000 of taxable income, is the option of averaging income over a five-year period. Another concession gives primary producers exemption from capital gains tax. Perhaps more important, primary producers are allowed tax deductions on a wide range of capital expenditures. In instances where a full deduction is allowed for a capital expenditure, depreciation deductions are not allowed for the same expenditure.

The allowance of deductions for capital expenditure is particularly valuable to producers who make expenditures toward farm improvement. For example, a producer who owns or acquires unimproved land can deduct capital expenditures for land clearing, seeding grasses, erecting fences, etc. These expenditures may well result in property value increases far greater than the combined total capital expenditure.

Farmers are allowed the same type of depreciation allowances as any other business for wear and tear on assets. However, primary producers are allowed a special depreciation allowance of 20 percent per annum on a wide range of assets. A special depreciation is applicable to improvement such as sheds or barns, but it is necessary that these are on land which is used for farming or grazing operations. Where applicable, a special depreciation of 20 percent is obligatory and primary producers cannot use ordinary depreciation rates even though they may be lower.

In addition to the special depreciation allowance spread over 5 years, producers receive a 20 percent investment allowance during the first year to encourage the use of new and up-to-date plants for primary production. The total deduction for the first year is 40 percent and the remaining depreciated value after the first year is 80 percent. Thus, the total deduction over a 5-year period is 120 percent of the cost.

Other programs

Extension (advisory) services are provided to the farming community, primarily by the State Departments of Agriculture, at many regional centers. Extension services consist mainly of technical service in the fields of agriculture and animal husbandry with some extension into the fields of farm management and economics.

Special programs have been enacted to assist farmers confronted with disastrous circumstances beyond their control, such as drought and periods of low prices. For example, during the 4 years beginning in 1971, farmers who are in danger of losing their property, but have potential for long-term success, will receive long-term, low interest loans. Funds currently available for this program are only about $US252 million. However, the Government is considering the establishment of an agricultural finance corporation to provide farmers with wider long-term finance

THE EXPORT MARKET

During the 1960's, substantial changes occurred in the pattern of Australian trade with other countries. In the beginning of the decade Australia's principal trading partner was the United Kingdom, which was the destination of about 24 percent of Australia's exports and a source of 31 percent of its imports. At the end of 1970, the trading position of the United Kingdom had declined to 9 percent of exports and 22 percent of imports.

The United Kingdom was displaced from its dominant position by the United States (25 percent) for imports, and by Japan (25 percent) for exports. Exports to the United States nearly doubled during the period making the United States Australia's second largest export market.

The composition of Australia's exports has also changed substantially over the last decade. Spectacular increases have occurred in exports of nonagriculture products. For example, mineral exports increased from U.S.$81 million in 1960-61 to $745 million in 1969-70. For agricultural products the most noteworthy gain occurred in meat exports, which increased from $135 million to $449 million. Wheat exports increased from $230 million to $378 million; and the value of wool exports, even with declining unit values, increased from $750 million to $853 million.

The composition of imports remained largely unchanged throughout the 1960's. Machinery, road motor vehicles, aircraft, and aircraft parts accounted for the major part of Australia's imports. Such imports are characteristic of a developing nation. However, the Australian economy is exhibiting more characteristics of a developed nation, as evidenced by the decrease in dependence on exports of agricultural products.

Nevertheless, during 1969-70 agricultural products accounted for about 55 percent of Australia's total exports. Receipts from exports of pastoral products, excluding dairy and farmyard, were equivalent to about two-thirds of the total agricultural exports.

Wool

Australia is the world's largest exporter of wool with exports totaling 1.7 billion pounds, product weight, in 1969-70. Exports of wool in 1969-70 were about 7 percent larger than in 1968-69, 18 percent above the 1961-65 average, and 32 percent more than the 1956-60 average.

Japan is Australia's largest market for raw wool. Italy, United Kingdom, and France are almost equally good markets, but exports to each of these countries are substantially below the level of shipments to Japan. West Germany and Belgium are traditionally important export markets, while shipments to the Soviet Union have increased sharply in recent years.

The United States was Australia's eighth largest market for wool during the 1969-70 season. However, appreciable quantities of raw wool exported to Japan and many of the other major importers are eventually exported to the United States in the form of textiles. Intensified competition from manmade fibers has resulted in the United States becoming a much less lucrative market for both raw wool and wool textiles, but the manufacture and sale of manmade fibers are worldwide phenomena.

Meat

Exports of beef and veal were 739 million pounds (fresh, chilled, and frozen) in 1969-70, compared with 587 million in 1967-68. Beef and veal exports in 1969-70 were 38 percent larger than the 1961-65 average and 98 percent above the 1956-60 average. Exports to the United States rose sharply after the commitment for beef and veal exports

Australia's exports of wool, product weight, by country of destination, average and annual[1]

Country of destination	Average		1966	1967	1968	1969	1970
	1956-60	1961-65					
	Mil. lb.	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*
Japan	250	421	473	497	502	535	573
Italy	125	127	145	160	132	138	144
United Kingdom	302	228	148	163	163	129	141
France	188	142	134	109	123	133	135
Germany, West	81	83	99	78	109	104	107
Belgium-Luxembourg	106	107	90	100	97	86	87
USSR	8	44	30	32	50	70	83
United States	47	62	100	72	79	80	61
Netherlands	3	4	14	15	16	29	51
Poland	34	26	28	31	36	34	34
China, Taiwan	(2)	1	12	8	13	24	30
Yugoslavia	7	14	17	24	20	19	27
Czechoslovakia	20	20	15	17	16	16	19
Mexico	12	18	22	22	15	25	15
Turkey	4	18	19	21	16	21	15
Korea, Republic of	2	3	4	8	9	13	13
China, Mainland	10	26	5	12	7	11	5
India	1	12	10	31	22	35	1
Other Countries	59	57	48	48	59	57	123
Total	1,259	1,413	1,413	1,448	1,484	1,559	1,664

[1] Year ending June 30. [2] Less than 500,000 pounds.

Source: Commonwealth Bureau of Census and Statistics, Overseas Trade.

Australia's exports of beef and veal (fresh, chilled, or frozen), product weight, by country of destination, average and annual[1]

Country of destination	Average		1966	1967	1968	1969	1970[2]
	1956-60	1961-65					
	Mil. lb.	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*
United States	65.6	356.2	348.3	415.1	443.7	470.9	516.7
United Kingdom	249.9	111.1	180.1	97.9	56.5	31.8	61.3
Japan	6.2	9.0	17.0	16.8	26.6	32.8	36.4
Canada	1.6	6.3	2.9	7.6	9.3	21.5	56.5
Malaysia[3]	10.8	8.3	6.7	6.7	5.3	6.0	5.3
West Indies Federation	2.9	4.3	4.5	4.7	2.4	3.4	4.1
Hong Kong	4.7	2.7	1.3	1.1	1.0	.6	.4
EC	10.7	15.6	[4] 23.1	4.0	.8	.3	1.2
Other Countries	21.9	21.1	29.0	24.7	21.1	19.9	[5] 57.4
Total	374.3	534.7	612.9	578.6	566.7	587.2	739.3

[1] Year ending June 30. [2] Preliminary. [3] Includes Singapore. [4] Includes 13.2 million pounds to Italy and 5.4 to West Germany. [5] Includes 34.5 million pounds to USSR.

Source: Commonwealth Bureau of Census and Statistics, Overseas Trade, The Beef Situation, and The Meat Producer and Exporter.

to the United Kingdom was removed in the late 1950's. In recent years the United States has been the recipient of 70 to 80 percent of Australia's export of beef and veal.

Exports of beef and veal have increased significantly to only two other countries—Japan and Canada. Japan is a new market with some definite potential, while Canada is part of the "North American" market. Exports to other countries have remained relatively small or, in the case of U.K., declined.

Exports of mutton also have increased substantially. Japan, the United States, and Canada are the major markets for Australian mutton.

Lamb exports have varied from year to year, increasing sharply since the relatively low level of shipments in 1967-68. The United Kingdom, the United States, and Canada take the bulk of Australian lamb exports. However, the United States and Canada were not important destinations for Australian lamb prior to the 1968-69 season.

Exports of variety meats traditionally have been to the United Kingdom, but the percentage exported to that market has declined from 86 percent during 1956-60 to 63 percent in 1969-70. A steady increase has occurred in shipments to a number of countries—France, Sweden, Japan, Singapore, and Canada.

Exports of canned meat have declined significantly during recent years. These declines are attributable to increased exports of boneless, manufacturing beef to the North American market and occurred in shipments to the United Kingdom which was Australia's major market.

Australia's exports of mutton and lamb (fresh, chilled, or frozen), product weight, by country of destination, average and annual[1]

Country of destination	Averages		1966	1967	1968	1969	1970[2]
	1956-60	1961-65					
Mutton:[3]	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*
Japan	0.4	19.7	56.7	61.0	89.7	50.7	99.4
Canada	15.5	18.8	22.4	28.3	33.1	36.2	62.0
United States	1.1	44.6	59.2	48.1	71.9	48.2	54.9
United Kingdom	22.8	17.7	8.4	11.3	15.7	9.3	25.5
Greece	.7	10.5	9.4	8.0	3.7	1.4	11.8
Malaysia[4]	2.9	5.2	5.8	6.2	6.5	7.1	7.7
Other Countries	5.6	13.1	16.0	16.2	13.5	16.4	43.1
Total	49.0	129.6	177.9	179.1	234.1	169.3	304.4
Lamb:							
United Kingdom	58.2	35.2	19.0	9.0	6.7	30.0	37.6
Canada	4.7	4.7	5.8	13.9	4.0	13.9	24.3
United States	1.8	3.8	3.8	2.9	3.1	16.2	21.9
Malaysia[4]	1.6	1.3	1.6	.7	.2	.1	.4
Other Countries	3.6	5.9	5.4	6.7	6.3	4.8	7.2
Total	69.9	50.9	35.6	33.2	20.3	65.0	91.4

[1] Year ending June 30. [2] Preliminary. [3] Includes a small amount of goat meat. [4] Includes Singapore.

Source: Commonwealth Bureau of Census and Statistics, Overseas Trade.

Australia's exports of variety meats, by country of destination, average and annual[1]

Country of destination	Averages		1966	1967	1968	1969	1970
	1956-60	1961-65					
	Mil. lb.	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*
United Kingdom	30.3	35.7	40.1	37.5	37.3	33.3	47.9
EC:							
France	---	1.3	2.9	2.7	2.9	3.1	4.9
Italy	1.0	1.4	2.6	2.5	1.0	1.1	2.0
Other EC	.3	.5	.4	.2	.2	.2	.3
Japan	(3)	.4	1.7	1.1	3.8	4.8	4.8
Sweden	(4)	.2	.7	1.6	.9	2.6	3.0
Canada	(4)	.8	.8	.9	1.0	1.7	2.7
Singapore	---	1.2	1.7	2.5	2.5	2.3	2.3
Malaysia	1.6	.8	.9	.5	.3	.5	.3
Other Countries	2.0	4.2	5.2	6.1	4.5	6.4	7.6
Total	35.2	46.5	57.0	55.6	54.4	56.0	75.8

[1] Year ending June 30. [2] Preliminary. [3] Less than 50,000 pounds. [4] Included in other countries.

Source: Commonwealth Bureau of Census and Statistics, Overseas Trade.

Australia's exports of canned meat, product weight, by country of destination, average and annual[1]

Country of destination	Averages		1966	1967	1968	1969[2]	1970[3]
	1956-60	1961-65					
	Mil. lb.	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*
United Kingdom	93.9	34.9	24.6	27.6	24.2	17.0	15.5
Australian Territories	8.3	8.7	11.4	9.0	9.4	8.3	9.5
Canada	7.6	5.8	3.4	2.2	1.3	2.2	2.3
Philippines	3.4	2.7	4.3	---	2.7	1.8	1.4
Other Countries	8.7	9.0	11.9	8.7	8.1	7.2	12.4
Total[4]	121.9	61.2	55.6	47.5	45.7	36.5	41.1

[1] Year ending June 30. [2] Preliminary and subject to revision. [3] Data from The Meat Producers and Exporter.
[4] Totals may not add because of rounding.

Source: Commonwealth Bureau of Census and Statistics, Overseas Trade, and The Beef Situation.

Hides and skins

Australia's exports of cattle hides totaled 139 million pounds in 1969-70, an increase of 24 percent over 1968-69. Exports during the 1969-70 season were 80 percent larger than the 1961-65 average and 180 percent above the 1956-60 average. Nearly half the cattle hides exported are destined for Japan. Western Europe, Hong Kong, and Taiwan are destinations for a large part of the remaining exports but small quantities of cattle hides are shipped to a number of other countries.

Exports of calf and kip skins have declined over the past decade. These declines are due to similar reductions of available supplies brought about by declines in calf slaughter. Japan is Australia's major market for calf and kip skins.

The major portion of sheepskin and lambskin exports are destined for Western Europe. The United States has not been an important export market for Australian sheepskins and lambskins since the late 1950's.

Tallow and greases

Australian exports of tallow and greases totaled 340 million pounds in 1969-70. Exports during 1969-70 were 48 percent larger than in 1968-69, 77 percent more than the 1961-65 average, and 154 percent above the 1956-60 average. These relatively large increases in exports resulted in part from changes in processing of meat for export. Prior to the late 1950's a large proportion of Australia's beef was exported as whole carcasses. Currently most of the beef is exported as boneless beef—usually 90 percent visible lean; thus, fat trimmings have been utilized for rendering.

Australia's export markets for tallow and greases are concentrated primarily in South Asia, the Far East, and Africa. Japan, which is Australia's largest market, is also the major market for U.S. tallow and greases.

Australia's exports of cattle hides by country of destination, average and annual[1]

Country of destination	Average		1966	1967	1968	1969	1970[2]
	1956-60	1961-65					
	Mil. lb.	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*
Japan	14.5	41.5	60.5	38.5	38.6	46.8	65.6
Germany, West	9.0	8.4	10.4	14.7	17.9	15.9	16.9
South Africa, Rep. of	0	2.5	4.3	5.3	8.0	8.3	11.2
Hong Kong	([3])	0.1	1.4	5.8	4.2	5.8	9.9
Italy	7.1	5.0	4.4	14.1	11.0	12.4	9.6
Poland	0.2	0.4	1.7	5.5	1.7	1.2	4.3
China, Taiwan	0.4	0.5	1.7	1.1	1.9	3.1	3.7
Netherlands	3.4	3.9	1.8	3.5	1.7	3.5	3.3
Finland	1.3	0.8	1.0	2.7	0.7	2.6	1.8
India	0.1	0.3	0.6	0.7	1.4	2.0	1.1
China, Mainland	([3])	2.7	2.5	1.7	1.9	2.7	1.0
United Kingdom	4.2	2.5	2.9	1.6	1.8	1.3	0.8
Singapore	0	0	0	0	0.9	1.1	0.4
Other Countries	9.5	8.7	8.0	15.8	12.2	5.4	9.7
Total	49.7	77.3	101.2	111.0	103.9	112.1	139.3

[1] Year ending June 30. [2] Preliminary. [3] Less than 50,000 pounds.

Source: Commonwealth Bureau of Census and Statistics, Overseas Trade.

Australia's exports of calf and kip skins by country of destination, average and annual[1]

Country of destination	Average		1966	1967	1968	1969	1970[2]
	1956-60	1961-65					
	Mil. lb.	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*
Japan	2.9	6.3	8.4	4.4	4.8	4.1	2.3
Italy	0.5	1.1	1.4	0.8	0.6	0.5	0.5
Spain	0	0.2	0.6	0.9	0.5	0.4	0.3
Netherlands	1.2	0.5	0.8	0.3	0.2	0.4	0.1
United States	0.1	0.1	0	0.1	0.1	0.5	([3])
Other Countries	2.3	1.9	4.2	1.6	1.2	0.9	0.2
Total	7.0	10.1	15.4	8.1	7.4	6.8	3.4

[1] Year ending June 30. [2] Preliminary. [3] Less than 50,000 pounds.

Source: Commonwealth Bureau of Census and Statistics, Overseas Trade.

Australia's exports of sheepskins and lambskins, with and without wool on, average and annual[1]

Country of destination	Average 1961-65	1966	1967	1968	1969	1970
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
France	121,283	130,860	120,689	128,693	138,840	146,906
Italy	22,568	35,846	45,580	46,145	42,631	50,502
Germany, West	3,715	2,071	3,515	5,450	8,810	14,684
United Kingdom	14,128	9,769	9,509	9,270	7,959	10,971
Yugoslavia	6,283	9,362	9,099	7,587	10,634	7,300
Spain	3,837	4,116	2,388	1,616	6,973	5,297
Netherlands	2,547	2,296	2,704	4,203	1,983	3,560
Japan	268	359	795	1,022	1,344	1,803
Sweden	1,518	850	1,370	375	969	1,313
Denmark	94	64	97	261	248	872
Finland	150	223	256	267	200	496
Portugal	381	0	0	0	146	395
Bulgaria	0	0	0	0	0	282
United States	279	38	87	0	66	244
Norway	253	153	286	285	176	197
Poland	80	42	18	154	0	167
Other Countries	7,195	6,301	2,495	1,293	1,780	2,461
Total	184,579	202,350	198,888	206,621	218,759	247,450

[1] Year ending June 30.

Source: Commonwealth Bureau of Census and Statistics, Overseas Trade.

Australia's exports of sheepskins and lambskins, pickled, average and annual[1]

Country of destination	Average 1961-65	1966	1967	1968	1969	1970
	Numbers	*Numbers*	*Numbers*	*Numbers*	*Numbers*	*Numbers*
Italy	66,233	36,396	255,048	219,492	137,880	373,596
France	164,639	420,456	205,128	240,696	285,336	305,688
United States	177,002	152,244	133,332	202,272	0	291,324
United Kingdom	219,421	112,128	228,516	109,488	131,544	158,808
Israel	13,440	59,940	24,540	33,108	30,000	112,788
Spain	174,211	0	63,552	0	237,144	110,592
Germany, West	30,096	87,288	46,296	55,308	46,224	59,220
Other Countries	235,206	250,596	242,364	369,516	741,996	147,792
Total	1,080,248	1,119,048	1,198,776	1,229,880	1,610,124	1,559,808

[1] Pickled reported in number for year ending June 30 of the year shown.

Source: Commonwealth Bureau of Census and Statistics, Overseas Trade.

Australia's exports of tallow and greases by country of destination, average and annual[1,2]

Country of destination	Average		1966	1967	1968	1969	1970[3]
	1956-60	1961-65					
EC:	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*	*Mil. lb.*
Belgium-Luxembourg	(4)	0.1	---	---	---	0.6	1.2
Netherlands	(4)	3.2	6.7	31.1	10.9	39.0	47.0
France	(4)	1.1	.2	.8	4.7	4.5	9.4
Italy	(4)	5.4	5.2	5.5	.4	---	---
Germany, West	(4)	.8	1.3	---	2.3	.8	5.9
Total EC	(4)	10.6	13.4	37.4	18.3	44.9	63.5
Japan	21.0	26.0	6.6	26.4	11.3	40.2	88.6
South Africa, Rep. of	20.0	32.8	18.0	34.5	24.8	34.4	45.5
Pakistan	6.0	8.6	12.4	19.3	.2	7.3	36.6
Burma	11.0	7.1	11.3	12.3	18.2	17.7	14.5
Malaysia/Singapore	9.0	14.2	9.5	5.6	9.5	10.7	14.5
United Kingdom	18.0	26.8	9.0	15.3	3.9	5.5	11.6
Kenya	(4)	4.7	3.1	2.6	5.4	9.9	9.4
Philippines	(4)	2.2	3.3	6.0	2.1	6.9	8.3
Mozambique	(4)	6.0	4.3	3.3	5.9	7.4	4.8
Thailand	4.0	3.4	5.8	6.3	5.3	5.7	4.8
Ceylon	4.0	6.5	7.9	5.6	13.4	6.1	4.2
Malawi	---	---	.9	1.7	1.9	3.7	4.9
Rhodesia, Southern	---	1.0	8.3	2.5	5.6	1.0	---
Zambia	---	.1	1.2	1.4	3.3	1.1	3.0
Rhodesia/Nyasaland	5.0	2.7	---	---	---	---	---
Padua/New Guinea	(4)	1.3	3.2	1.5	1.6	2.2	2.1
China, Mainland	3.0	18.1	9.1	---	4.3	.7	---
India	5.0	4.3	.4	20.7	34.5	10.7	---
Other countries	28.0	16.4	7.3	8.1	11.2	14.2	24.1
Total	134.0	192.8	135.0	210.5	180.7	230.3	340.4

[1] Includes edible and inedible tallow and greases, and other edible and inedible animal fats and oils. [2] Year ending June 30.
[3] Preliminary. [4] If any, included in "Other countries."

Source: Commonwealth Bureau of Census and Statistics, Overseas Trade.

COMPETITION WITH U.S. PRODUCERS

The gross value of Australian pastoral production, excluding dairy and poultry, has been less than US$2 billion in recent years. In terms of farm value, Australian livestock production, excluding dairy and poultry, is equivalent to about 10 percent of the comparable output of the U.S. livestock industry. Nevertheless, the Australian livestock producer is the U.S. livestock producer's major competition in both the U.S. domestic market and in the third countries.

Australia's competition in the U.S. domestic beef market is a relatively recent development. With the removal in 1958 of the commitment for beef and veal exports to the United Kingdom, the change in direction of this trade was abrupt. And with the removal of a similar New Zealand commitment to ship beef and veal to the United Kingdom, U.S. imports of beef and veal from Oceania rose sharply. These increases in import supplies coincided with even greater increases in U.S. domestic production.

In 1964 U.S. producer prices fell to disastrous levels. As a result the U.S. Congress passed the Meat Import Law (P.L. 88-482) which encompasses a market-sharing arrangement between domestic and imported supplies of fresh, chilled or frozen beef, veal, mutton, and goat meats. Since 1964 Australian exports of these meat products (and identical imports from other suppliers) to the United States have been subject to quota limitations. U.S. legislation provides for the imposition of quotas on imports of these meats if estimates made by the Secretary of Agriculture indicate that imports during any calendar year are likely to equal or exceed the trigger level as set forth in the law.

The law provides for the growth of imports in the same proportion as the growth in domestic production. The growth rate is the increase of U.S. commercial production for 3-year period (current year plus the 2 preceding years), over the average for the base period (1959-63). The adjusted annual base import quota is calculated by multiplying

the growth rate by imports during the 1959-63 base period—725,400,000 pounds. The trigger for the imposition of quotas is reached when the Secretary estimates imports are likely to equal or exceed the adjusted annual import quota level, plus 10 percent. The adjusted annual base quota for 1971 was about 41 percent greater than imports during the 1959-63 base period.

Import quotas have not been operative since the enactment of the law; however, voluntary restraint programs have been in operation since October 1968. Between October 1968 and June 29, 1970 supplying countries agreed to limit their shipments to the United States in order to maintain the level of imports below the trigger level. During this period the voluntary restraint program assured U.S. Government and industry representatives that imports of meat subject to the law would be maintained below the trigger level but allowed imports above the levels which would have been applicable with the imposition of quotas.

Import quotas were invoked for the first time on June 29, 1970, but simultaneously suspended; and a new restraint level was established at 1,160 million pounds which exceeded the 1970 trigger level by about 41 million pounds. The restraint level for 1971 was maintained at 1,160 million pounds—33 million pounds above 1971 trigger level. These higher restraint levels were determined by overriding economic interest of the United States, but gave special weight to the importance of the economic welfare of the U.S. domestic industry.

U.S. imports of Australian fresh or frozen beef, veal, and mutton (subject to the import law) account for a little less than 50 percent of the total imports of these meats. Most of the imports from Australia are boneless beef. However, Australia supplies even a larger percentage of the U.S. mutton imports.

U.S. commercial production of beef, veal, mutton, and goat meats (meats subject to the law) during 1970 was about 6.5 billion pounds above the 1959-63 average. Imports in 1970, even with a 58 percent increase, were only 428 million pounds, product weight—or an estimated 605 million pounds, carcass weight—larger than the 1959-63 average. U.S. commercial production of these meats (largely beef and veal) increased from about 15.7 billion pounds, carcass weight, to 22.2 billion bounds. Imports increased from about 725 million pounds to 1,153 million pounds, product weight, or from 1,006 million to 1,611 million, carcass weight. These figures illustrate the limited extent of competition U.S. producers are confronted with from imported meat; but, more importantly, they illustrate the importance of the U.S. domestic beef production to the nation.

Significantly, the enactment of the import law did not result in limitation on imports until late 1968 and limitations since then have been liberal compared with the restraints that could have been imposed under the law. Thus, to date, the main aspect of the law has been the stability it has added to the domestic beef industry. This market stability, achieved in part due to the market sharing management, has been mutually beneficial to both the U.S. industry and the beef industry in the foreign supplying countries.

In addition to beef, veal, mutton, and goat meats, U.S. imports from Australia include appreciable quantities of lamb, wool, and sheep and lamb skins. In view of continuing declines in U.S. sheep production, prospects are that Australia and other exporters will supply larger percentages of the U.S. requirements for these products. Competition for the U.S. market for these products, however, is not limited to the comparative position of the domestic and foreign supplier, since producers will be confronted with strong competition from manmade substitutes. As has been true in the past, this phenomenon will not be limited to the U.S. market. Even in Australia, which is one of the world's leading exporters of animal products, the livestock industry will continue to experience competition from manmade products in the Australian domestic market.

Competition between the U.S. and the Australian livestock industries in third country markets is limited to a small number of specific products, and their relative position in the market varies from product to product and from country to country. For example, the United States and Australia both export beef and tallow to Japan. Australia supplies most of Japan's relatively small imports of beef, while the United States supplies the bulk of Japan's large imports of tallow. As the Japanese become more familiar with the high quality of grain-fed beef, U.S. beef exporters may improve on their competitive positions in the Japanese market. In the case of tallow, U.S. exporters will be confronted with increasing competition in the Japanese market from Australia. In both beef and tallow, U.S. exporters currently have the advantage of being able to offer higher quality products and greater assurances of quality control. Australian exporters, particularly of beef, have the advantage of being able to offer their products at prices appreciably below those of U.S. suppliers.

With the limited supplies of beef being exported outside the North American market, Australia competes with South American exporters for the European import market for manufacturing and table beef. In the same region, U.S. exporters are striving to promote increased sales of high-quality beef for the hotel and restaurant trade. U.S. and Australian exporters compete more directly for the European variety meat import market, especially in the United Kingdom.

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